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U.S. Department of the Interior
Bureau of Land Management

Vale District Office
100 Oregon Street
Vale, Oregon 97918

March 1995



South Alkali Management Area

Analysis of Management Alternatives

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BLM/OR/WA/ES-95/012+1792



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Vale District Office
100 Oregon Street
Vale, Oregon 97918



IN REPLY REFER TO:

1613

Dear Interested Citizen:

Thank you for your interest in following the development of a management plan for the South Alkali Area. Enclosed is an alternative management analysis for your review and comment. The management plan is being developed with guidance from the Northern Malheur Management Framework Plan (MFP). The document describes and analyzes alternative management actions for the South Alkali Area. We need your comments within 30 days from the date of this letter in order for them to be considered in the next phase of planning.

The next phase of the planning process will be to develop a preferred management alternative and an environmental assessment. These documents should be available for public review in the spring of 1995.

In order to control the costs of document reproduction and mailing, we will mail future documents only to those who comment on this alternative analysis or to those that contact us and indicate they would like to receive future information for comment.

Sincerely,

Ralph Heft
Malheur Resource Area Manager

Enclosure (as stated)

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South Alkali Management Area

Analysis of Management Alternatives

MARCH 1995

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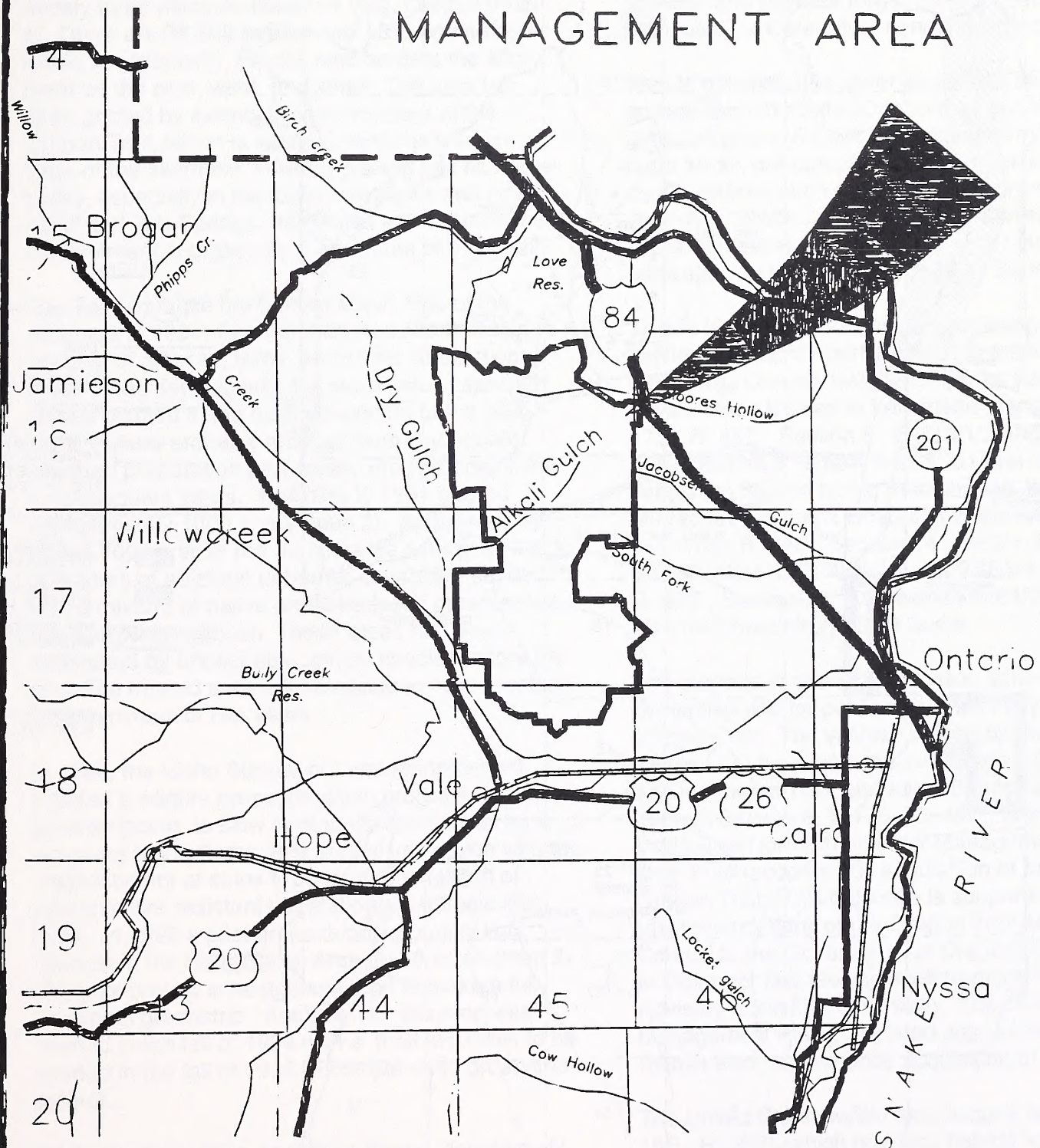
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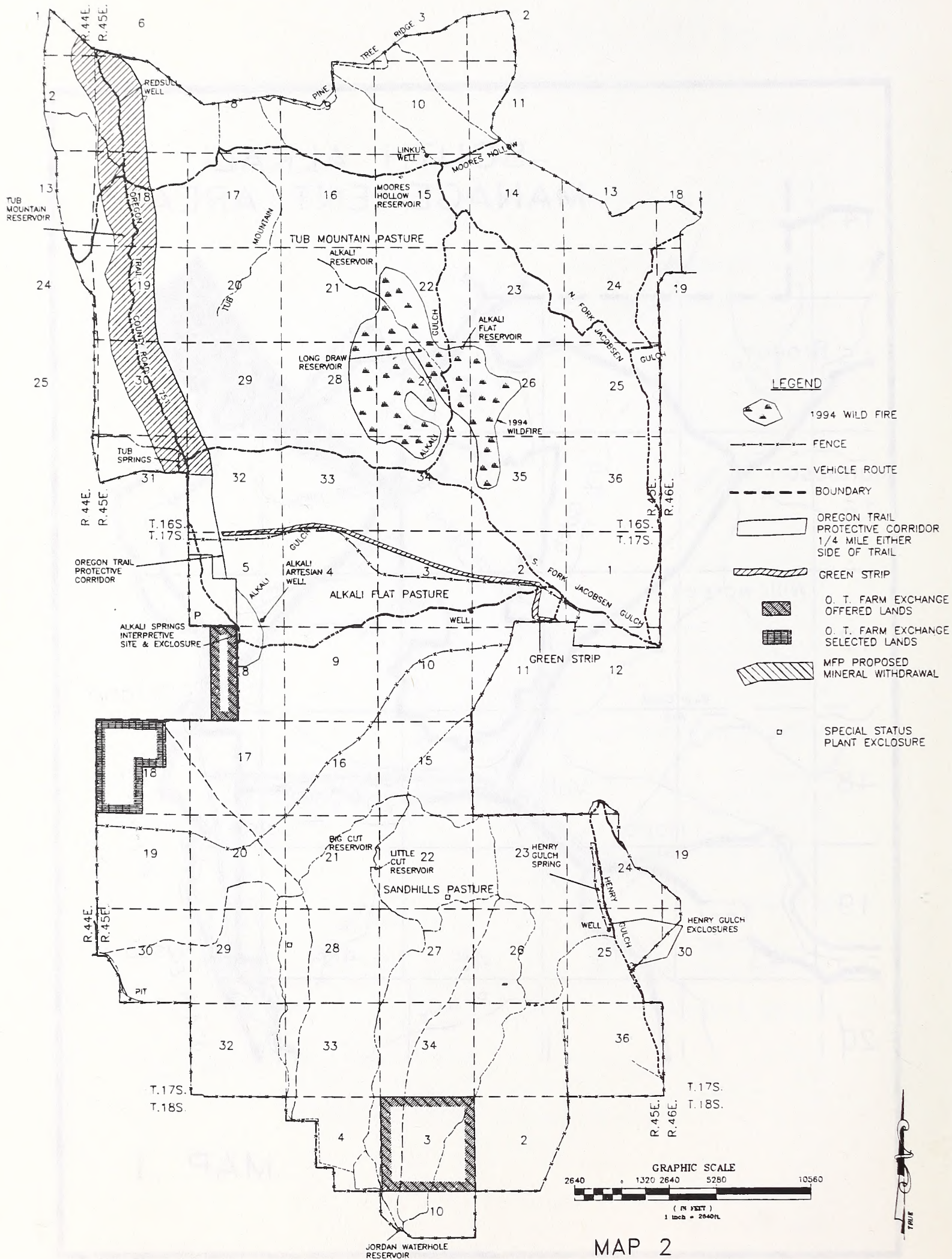
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SOUTH ALKALI MANAGEMENT AREA



MAP 1



I. Introduction

Background

The South Alkali grazing allotment is located approximately three miles northeast of Vale, Oregon (map 1). There are 36,550 federal and 1650 private acres within the allotment. Private land borders the allotment on the east, west, and south. The area has been grazed by livestock since the days of the Oregon Trail, which is located along the western edge of the allotment. Historic grazing use has been heavy, especially in the lower elevations and near Alkali and Tub Springs. At current active preference, the allotment is grazed by a maximum of 977 cattle.

The Tub Mountain fire burned about 45% of the allotment in 1986. Fire rehabilitation efforts included seeding of grasses, forbs, and some shrub species. Much of the seeding was not successful, especially shrubs planted in the northern portion of the allotment. Failure probably resulted from inadequate seedbed preparation and severe drought conditions in subsequent years. A wildfire in 1994 burned approximately 1000 acres (map 2). Approximately 600 to 700 acres of the burned area as well as 300 to 350 acres of adjacent unburned area were seeded with a mixture of native and introduced grasses, forbs and four wing saltbush. These areas had been dominated by undesirable annual species before the fire. The treated area will be excluded from livestock for a minimum of two years.

In 1984, the Idaho Bureau of Land Management initiated a wildfire presuppression program, termed greenstripping, to slow or stop wildfire spread by replacing highly flammable annual vegetation with the establishment of strips (100 to 300 feet wide) of perennial fire resistant vegetation at strategic locations. In 1992 a pilot greenstripping project was initiated in the South Alkali Area on 50 acres (map 2). The pilot project is being expanded to make a fully functional greenstrip. Another two mile strip was seeded in the fall of 1994 with a final two miles to be seeded in the fall of 1995 to complete the greenstrip project.

Wintering mule deer, as well as Rocky Mountain elk, pronghorn antelope and a variety of other wildlife species are found in the area. Two special status wildlife species nest within the allotment: burrowing owls (Category 2 candidate species) and ferruginous hawks (Category 2 candidate species). The northern sagebrush lizard (Category 2 candidate species) and the desert horned lizard (Bureau Sensitive) are likely

to be found in the area. Long-billed curlews, a former Category 3 candidate species, nest in the open flats.

Two plant species being considered for listing under the Endangered Species Act are found in the hills of South Alkali. These species are Mulford's milk-vetch (*Astragalus mulfordiae*), a Category 2 candidate species, and Malheur forget-me-not (*Hackelia cronquistii*), a Category 1 candidate species.

Weeds dominate the lower elevations and continue to spread. Scotch thistle (*Onopordum acanthium*) and tumbled mustard (*Sisymbrium altissimum*) dominate large areas, out-competing native species as well as exotic annuals such as cheatgrass (*Bromus tectorum*). Medusahead wildrye (*Taeniatherum caput-medusae*) also is making major inroads, particularly in the flats east of Alkali Spring.

The BLM is in the process of completing a land exchange (map 2), part of which is within the planning area. Oregon Trail (O.T.) Farms has offered private lands located in Willamette Meridian in T. 17S., R. 45E., Section 8: E1/2W1/2 and T. 18S., R. 45E., Section 3: Lots 1, 2, 3, 4, S1/2N1/2, S1/2, containing 802.64 acres. In exchange, the U.S. has offered federal lands located in Willamette Meridian in T. 17S., R. 44E., Section 14: NE1/4, N1/2NW1/4, SE1/4NW1/4, NE1/4SW1/4, N1/2SE1/4 and T. 17S., R. 45E., Section 18: Lots 1, 2, 5, 6, E1/2W1/2, W1/2NE1/4, containing 793.01 acres.

The purpose of the exchange is to consolidate ownership and for public acquisition of portions of the Oregon Trail. The values realized by the United States from the exchange include an important stop on the Oregon Trail, and Alkali Spring, which passes through Section 8, T. 17S., R. 45E., of the offered lands. The Northern Malheur Management Framework Plan recommends acquisition of parts of the Oregon Trail. This objective is supported by the recommendations of the Oregon Trail Advisory Council to the Governor (*Our Oregon Trail*. A report to Governor Neil Goldschmidt from the Oregon Trail Advisory Council - April 1988). The Oregon Trail Management Plan completed July, 1989 for the Vale District also recommends acquisition of this parcel.

The United States would also acquire Section 3, T. 18S., R. 45E., which provides habitat for Mulford's milk-vetch, a Category 2 candidate plant species under consideration for listing as threatened or endangered.

Management of lands that may be acquired by BLM within and adjacent to the management area have been included in the alternative management actions

analyzed. Public lands within the management area that may revert to private ownership would no longer be subject to this plan. The projected completion date for the exchange is September 1995.

A one half mile wide corridor along the Oregon Trail was recommended for mineral withdrawal in the Northern Malheur Management Framework Plan. This proposed withdrawal includes lands along the trail route between Tub Springs and Birch Creek on the north. To date, this withdrawal has not been completed. These lands also are recommended for a No Surface Occupancy stipulation on mineral leases.

It was also determined in the Northern Malheur Management Framework Plan (MFP) that there would be no authorized uses in long-billed curlew nesting areas during the nesting period of May through July. Curlew nesting areas in the South Alkali allotment were inadvertently excluded in the October 9, 1980 Federal Register which listed off-highway vehicle (OHV) designations of the MFP. Current OHV designations are detailed on map 3.

Two areas within the allotment have been proposed as Areas of Critical Environmental Concern (ACEC). One is in the sand hills found in the southern portion of the allotment. Another includes Alkali Springs and Tub Springs and a section of the Oregon Trail. It is not within the scope of this plan to designate ACECs; these areas will be analyzed in the upcoming Resource Management Plan for possible designation. Interim management for those areas must protect the values for which the area could be designated.

Purpose and Need

In the 1992 allotment evaluation for South Alkali, it was found that vegetative trend was either static or downward. Presently, management objectives (improve condition) for vegetation are not being met. Lack of water creates poor distribution and uneven utilization patterns by grazing livestock. A grazing system needs to be developed and implemented to allow vegetation conditions to improve and management objectives to be met.

South Alkali contains important habitat for wintering mule deer, as well as other game and non-game wildlife species. There is concern about deer use of adjacent private croplands to the east of the management area since winter forage and cover was reduced by the Tub Mountain fire. Development of a native shrub component for wildlife would be difficult to accomplish without integration into the livestock grazing system.

The U.S. Fish and Wildlife Service is in the process of listing Mulford's milk-vetch as threatened. While somewhat wide-spread geographically, the species does not occupy many sites of apparent suitable habitat. Many of these populations are vulnerable to disturbances across the range of the species. A trend study in the South Alkali pasture shows that a population of Mulford's milk-vetch has decreased in numbers of plants by more than 75% over the last six years. The plant also grows in habitat being converted to housing on the Boise Front, making management of populations on Federal land particularly crucial to survival of the species.





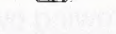

Consistency with Land Use Plans, Relationship to Statutes, Regulations and Other Plans

Management actions (alternatives) have been developed to meet management objectives. General objectives for the area were established in the Northern Malheur Management Framework Plan (1983) and the Ironside Grazing Environmental Impact Statement (1980). After considering site specific issues identified through the scoping process, as well as pertinent law, regulation and BLM policy, more specific objectives have been identified for the management plan. These objectives are consistent with the objectives in the Land Use Plan for this area and are listed below.

Objectives of this Management Plan






- Maintain late ecological conditions (late seral stage) and potential natural communities (PNC) where they currently exist. These vegetative communities are either near or at their potential in terms of kinds, amounts and numbers of plant species which are expected to occupy their respective sites in undisturbed situations.
- Maintain or increase populations and habitat of special status plants.
- Improve ecological condition in early and middle seral stage areas that retain native perennial vegetative species and have the potential for improvement.

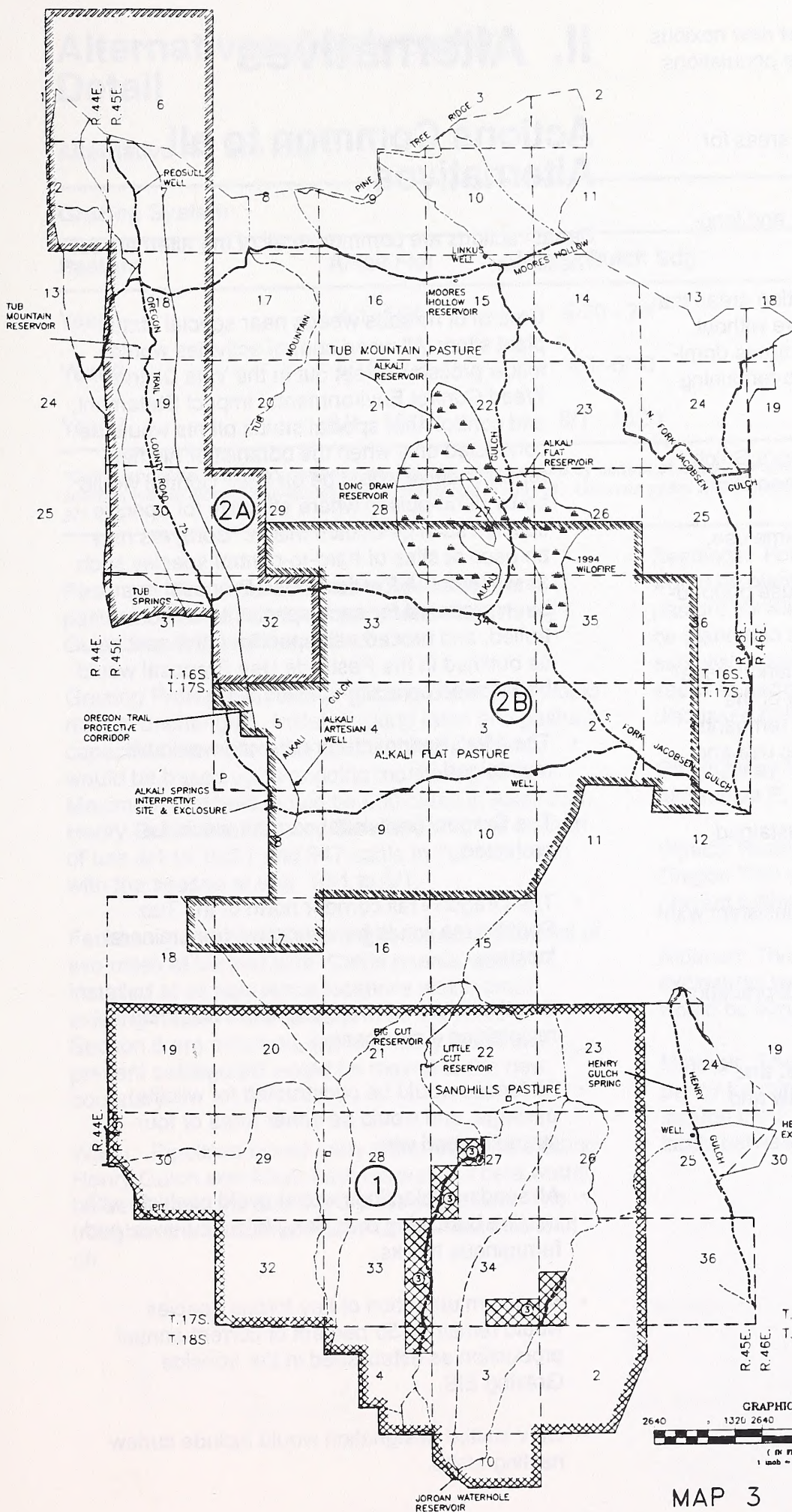
OFF HIGHWAY VEHICLE (OHV) USE DESIGNATIONS

-  1 OHV PLAY AREA - OPEN ALL YEAR
-  2 LIMITED TO EXISTING ROUTES
-  A OREGON NATIONAL HISTORIC TRAIL - YEAR LONG.
-  B CURLEW NESTING HABITAT 5/1-7/1
-  3 LIMITED TO DESIGNATED ROUTES - YEAR LONG SENSITIVE PLANT SPECIES HABITAT
-  DESIGNATED ROUTES

NOTE: REMAINDER OF PUBLIC LANDS DESIGNATED OPEN TO O.H.V. USE YEAR LONG

LEGEND

-  1994 WILD FIRE
-  VEHICLE ROUTE
-  BOUNDARY
-  OREGON TRAIL PROTECTIVE CORRIDOR 1/4 MILE EITHER SIDE OF TRAIL
-  SPECIAL STATUS PLANT ENCLOSURE



MAP 3
SOUTH ALKALI MANAGEMENT PLAN
EXISTING
OHV PLAN FOR ALTERNATIVES A, B & D

- Keep out or reduce the potential of new noxious weed invaders. Contain or reduce populations of existing noxious weeds.
- Increase shrub cover in identified areas for wildlife habitat.
- Maintain habitat for burrowing owl and long-billed curlew.
- Reduce soil erosion in early condition areas that do not have the potential to improve without physical manipulation. These are areas dominated by annual vegetation with no remaining native perennial species.
- Improve riparian conditions in Henry's Gulch and at Alkali Spring to functioning condition.
- Improve bitterbrush base for big game use.
- Provide undeveloped recreational use opportunities throughout the year.
- Manage, protect, preserve and enhance visual integrity and aesthetics of the route of the Oregon Trail, along with its historic remnants and artifacts, and allowing for public use and enjoyment.
- Provide forage for livestock on a sustained basis.
- Provide for mineral development consistent with law and regulation.
- Reduce the potential for big game depredation on adjacent private land.
- Manage paleo-resources, prehistoric and historic properties consistent with law and regulation.

II. Alternatives

Actions Common to all Alternatives

Certain actions are common to all of the alternatives. These are:

- Control of noxious weeds near special status plant sites: All weed control activities would follow procedures set out in the Vale District Weed Control Environmental Impact Statement, and control near special status plants would be conducted only when the botanist or his/her representative would be on site. Control would be by hand-pulling where effective for specific species such as Scotch thistle. Sprayers may be used at sites of hard-to-control species such as whitetop. A Pesticide Use Proposal has been prepared for each species to be controlled, and procedures specific to the species as outlined in the Pesticide Use Proposal would be followed on a site-specific basis.
- The Alkali Spring interpretive site would be maintained.
- The Oregon Trail visual corridor would be protected.
- The Oregon Trail corridor north of the Tub Spring area would be withdrawn from mineral location.
- Small sections of two-track roads would be maintained if necessary.
- All fences would be constructed for wildlife passage, and would be either three or four-strand barbed wire.
- All seedings/plantings would avoid conflicts with nesting burrowing owls, long-billed curlews, and ferruginous hawks.
- Maximum utilization of key forage species would remain at 50 percent of current annual production as established in the Ironside Grazing EIS.
- OHV limited designation would include curlew nesting areas.

Alternatives Analyzed in Detail

Alternative A. See map 4

Grazing System:

Pasture	Alkali Flat	Henry Gulch Sdg	Sandhills	Tub Mtn
Year 1	4/1 - 5/20	5/20 - 7/1	7/1 - 10/31	10/1 - 5/1*
Year 2	5/10 - 7/1	4/1 - 5/10	7/1 - 10/31	10/1 - 5/1*
Year 3	8/1 - 10/31	8/1 - 10/31	4/1 - 8/1	10/1 - 5/1*

**Cattle would be further controlled in the Tub Mountain pasture by control of water. On odd years Linkus well and Jacobson Gulch water sources will be closed to livestock during the period 3/1 to 5/1. On even years Redsull well and Tub Spring will be closed to livestock from 3/1 to 5/1.*

Pastures: The area would be divided into four pastures, named Tub Mountain, Alkali Flat, Henry Gulch Seeding and Sandhills.

Grazing Preference: Active grazing preference would remain unchanged. Initial stocking rates and pasture capacities are estimates and future adjustments would be based upon ongoing monitoring data. Maximum numbers would be 430 cattle in Alkali Flat, Henry Gulch Seeding and Sandhills with the season of use 4/1 to 10/31 and 547 cattle in Tub Mountain with the season of use 10/1 to 5/1.

Fences: Henry Gulch seeding fence would consist of two miles of barbed wire. Cattle guards would be installed at all new fence locations which cross existing roads. If the lands in T. 17 S., R. 45 E., Section 8 are acquired, the boundary fence and present cattleguard would be moved to the new boundary.

Water: Pipelines would carry water from the existing Henry Gulch and Alkali Artesian wells. There would be seven troughs and 5 1/2 miles of pipeline. The trough in the bottom of Henry Gulch would be shut off.

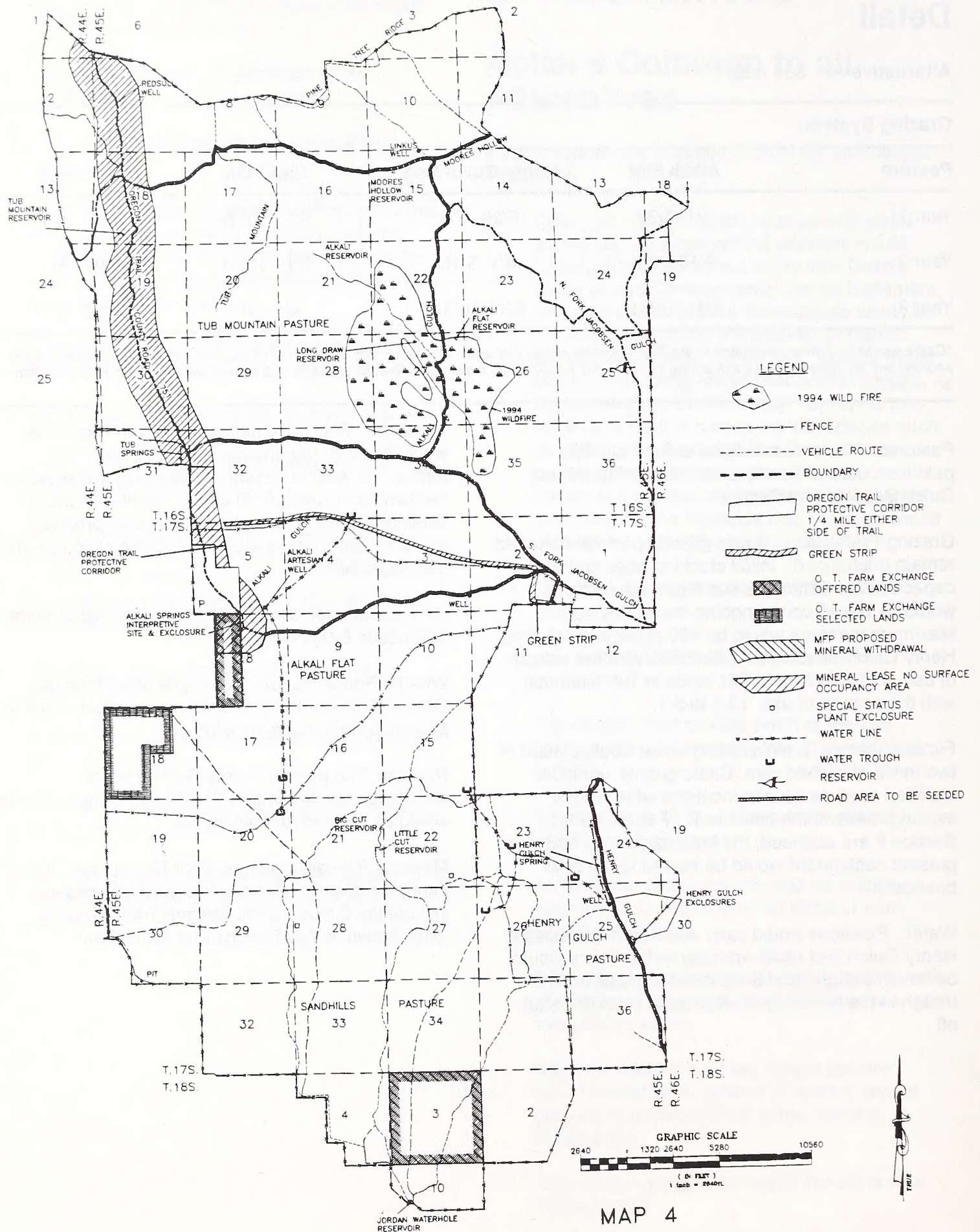
Seedings: Four wing saltbush and big sagebrush would be planted primarily in the Tub Mountain pasture for wildlife habitat and browse. These would be planted in small (5-50 acres) "mother" areas to establish a seed source for the natural spread of seeds to surrounding areas. Roadside seedings are discussed below.

Off-Highway Vehicle Use: Same as described under Alternative E, No Action.

Weeds: Roadsides on main roads other than the Oregon Trail would be seeded with crested wheat to prevent further weed invasion.

Riparian: The present Henry Gulch riparian enclosures would remain. The Alkali Spring enclosure would be expanded to 40 acres.

Minerals: The area proposed for No Surface Occupancy for mineral leases would be expanded to include the 2 miles of the Oregon Trail on public lands between Tub Springs and Alkali Flat.



MAP 4
SOUTH ALKALI MANAGEMENT PLAN
ALTERNATIVE A

Alternative B. See map 5

Grazing System:

Pasture	Alkali Flat	Henry Gulch	Sandhills W	Sandhills E	Tub Mtn
Year 1	3/1 - 5/20	5/20 - 7/1	7/1 - 10/01	10/1 - 12/15	12/1 - 5/1*
Year 2	5/1 - 7/1	3/1 - 5/1	7/1 - 10/01	10/1 - 12/15	12/1 - 5/1*
Year 3	7/1 - 8/1	8/1 - 10/1	3/1 - 7/1	10/1 - 12/15	12/1 - 5/1*

**Cattle would be further controlled in the Tub Mountain pasture by control of water. On odd years Linkus well and Jacobson Gulch water sources will be closed to livestock during the period 3/1 to 5/1. On even years Redsull well and Tub Spring will be closed to livestock from 3/1 to 5/1.*

Pastures: The area would be divided into five pastures, named Alkali Flat, Tub Mountain, Henry Gulch, Sandhills East and Sandhills West.

Grazing Preference: Grazing preference would not change. Initial stocking rates and pasture capacities are estimates and future adjustments would be based upon ongoing monitoring data. Maximum numbers and season of use in Alkali Flat, Henry Gulch and Sandhills East and West pastures would be 147 cattle from 3/1 - 4/1, 430 cattle from 4/1 - 5/1, 283 cattle from 5/1 - 7/15, 430 cattle from 7/15 - 10/31 and 147 cattle from 11/1 - 12/15. Maximum numbers and season of use in Tub Mountain pasture would be 760 cattle from 12/1 to 5/1.

Fences: Three fences are proposed: 1) Two miles of barbed wire fence to create the Henry Gulch pasture, 2) Five miles of fence to split the Sandhills into two pastures, and 3) If the lands in T. 17 S., R. 45 E., Section 8 are acquired, a mile of fence along the western boundary to enclose the acquisition (160 acres).

Water: Pipelines would carry water from the existing Henry Gulch and Alkali Artesian wells. There would be seven troughs and 5 1/2 miles of pipeline. The trough in the bottom of Henry Gulch would be shut off.

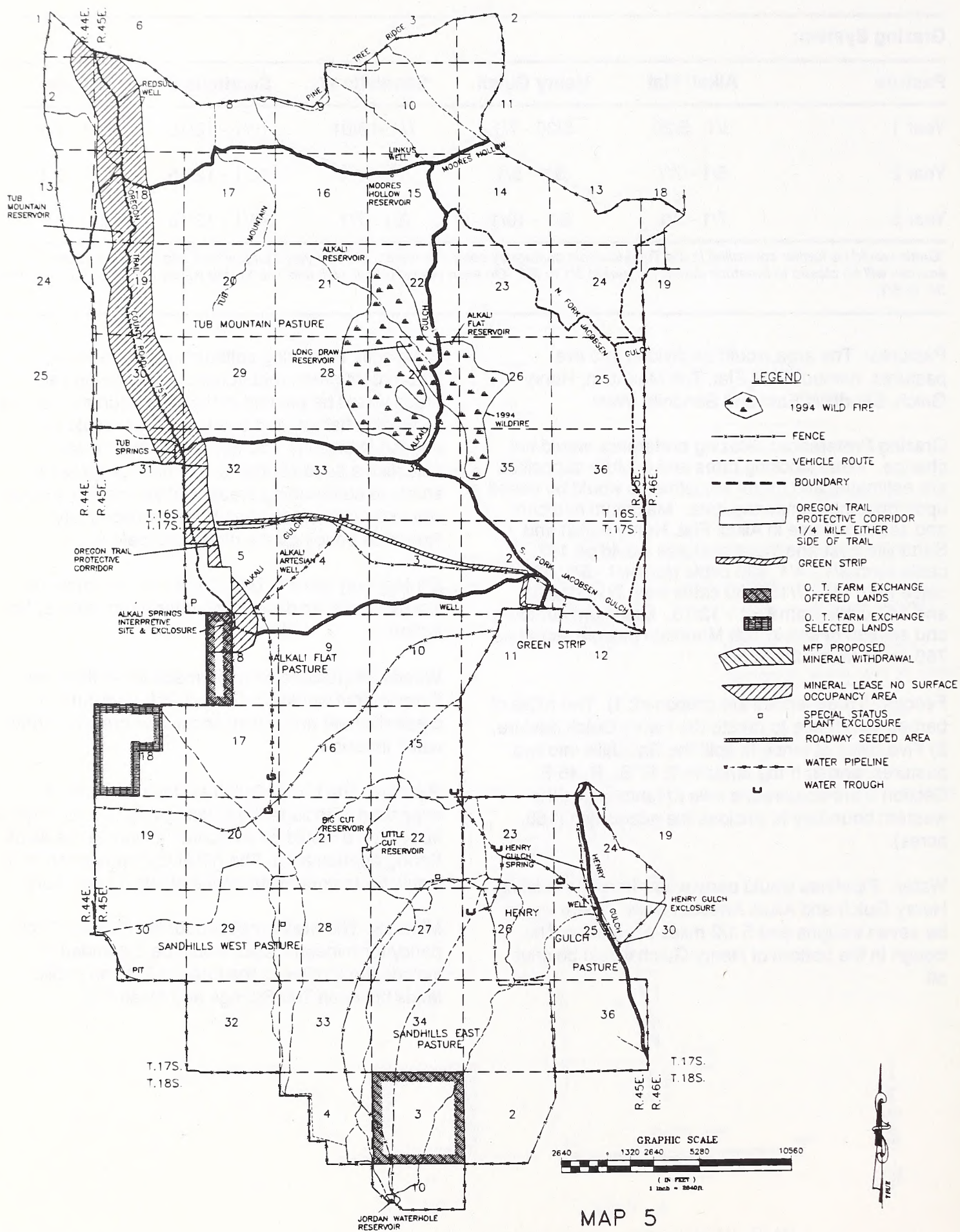
Seedings: Four wing saltbush, big sagebrush, bitterbrush, green rabbitbrush and three-tip sagebrush would be planted in the Tub Mountain pasture for wildlife habitat and browse. These would be planted in small (5 - 50 acres) "mother" areas to establish a seed source for the natural spread of seeds to surrounding areas. Native riparian species would be planted at Alkali Spring if necessary. Roadside seedings are discussed below.

Off-Highway Vehicle Use: OHV use designations would remain as described under Alternative E, No Action.

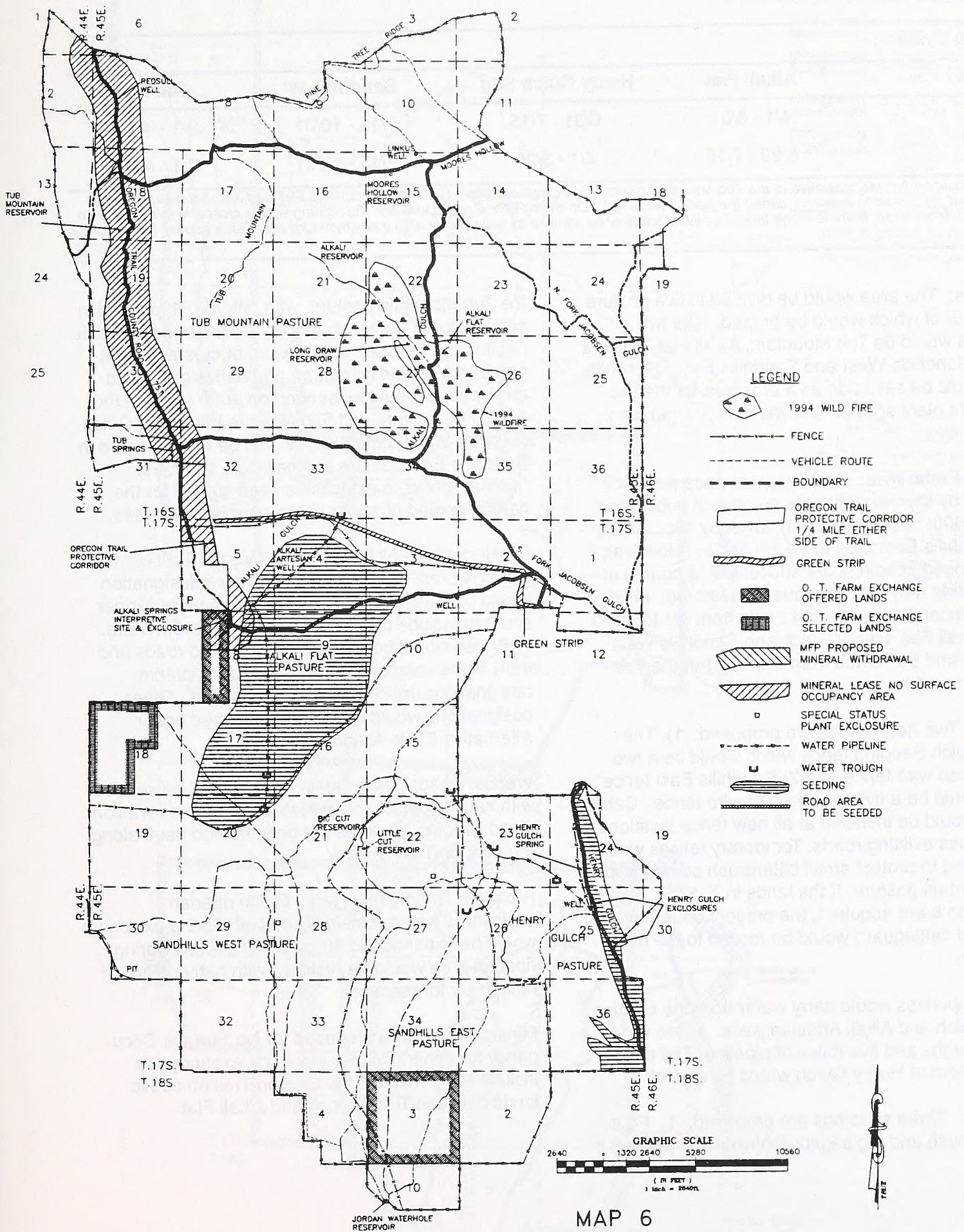
Weeds: Roadsides on main roads other than the Oregon Trail would be seeded with a mixture of crested wheat and native species to prevent further weed invasion.

Riparian: The Henry Gulch enclosure would be expanded to include the lower spring. Lands acquired in Section 8 would be excluded, including the Alkali Spring riparian area. The Alkali Spring riparian area would be restored with native plants if necessary.

Minerals: The area proposed for No Surface Occupancy for mineral leases would be expanded to include the 2 miles of the Oregon Trail on public lands between Tub Springs and Alkali Flat.



MAP 5
SOUTH ALKALI MANAGEMENT PLAN
ALTERNATIVE B



Grazing System:

Pasture	Alkali Flat	Henry Gulch Sdg	Sandhills W	Tub Mt
Year 1	4/1 - 6/01	6/01 - 7/15	7/15 - 10/31	9/1 - 4/1*
Year 2	5/20 - 7/15	4/1 - 5/20	7/15 - 10/31	9/1 - 4/1*

*Cattle would be further controlled in the Tub Mountain pasture by control of water. On odd years Linkus well and Jacobson Gulch water sources will be closed to livestock during the period 3/1 to 4/1. On even years Redsull well and Tub Spring will be closed to livestock from 3/1 to 4/1. In addition, there is some flexibility; livestock may be allowed to remain until 4/15 if soil moisture conditions appear favorable for regrowth.

Pastures: The area would be divided in five pasture units, four of which would be grazed. The five pastures would be Tub Mountain, Alkali Flat, Henry's Gulch, Sandhills West and Sandhills East. Sandhills East would be set aside as a preserve for the two candidate plant species and the native vegetation communities.

Grazing Preference: Grazing preference would be reduced by the proportionate number of public land acres (4000) and AUMs (670) currently allocated to the Sandhills East area to be set aside. However, if the proposed seedings are successful, a portion of those AUMs may be subsequently restored. Maximum numbers would be 334 cattle from 4/1 to 10/31 in the Alkali Flat, Henry Gulch and Sandhills West pastures and 547 cattle from 9/1 to 4/1 in the Tub Mountain pasture.

Fences: Two new fences are proposed: 1) The Henry Gulch Seeding fence which would be a two mile barbed wire fence and 2) Sandhills East fence which would be a five mile barbed wire fence. Cattle guards would be installed at all new fence locations which cross existing roads. Temporary fences would be installed to protect small bitterbrush plantings in Tub Mountain pasture. If the lands in T. 17 S., R. 45 E., Section 8 are acquired, the present boundary fence and cattleguard would be moved to the new boundary.

Water: Pipelines would carry water from the existing Henry Gulch and Alkali Artesian wells. There would be six troughs and five miles of pipeline. The trough in the bottom of Henry Gulch would be shut off.

Seedings: Three seedings are proposed: 1) Four wing saltbush and big sagebrush would be planted in

the Tub Mountain pasture, with bitterbrush planted in small (5 to 50 acres) temporary exclosures for wildlife habitat and browse, 2) a mixture of crested wheat-grass (*Agropyron cristatum*) and native grass and forb species would be seeded on 2000 acres in the Alkali Flat pasture and 570 acres in the Henry Gulch seeding, and 3) bitterbrush would be hand-planted in Sandhills East pasture in small (5 to 10 acres) "mother" areas to establish a seed source for the natural spread of seeds to the surrounding areas.


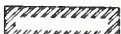




Off-Highway Vehicle Use: The Oregon Trail corridor which is presently a "limited" OHV use designation would be extended approximately two miles further south to include the Alkali Springs interpretive site. OHV use would be limited to designated roads and trails in the sand hills. These would be interim designations until the RMP is completed. Other designations would remain as described under Alternative E, No Action.

Weeds: Roadsides on main roads would be seeded with native species to prevent further weed invasion. Hand seeding would be the only method used along the Oregon Trail corridor.

Riparian: The present Henry Gulch riparian exclosures would remain. The Alkali Spring exclosure would be expanded to 40 acres. The Alkali Spring riparian area would be restored with native plants if necessary for recovery.




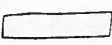

Minerals: The area proposed for No Surface Occupancy for mineral leases would be expanded to include the 2 miles of the Oregon Trail on public lands between Tub Springs and Alkali Flat.

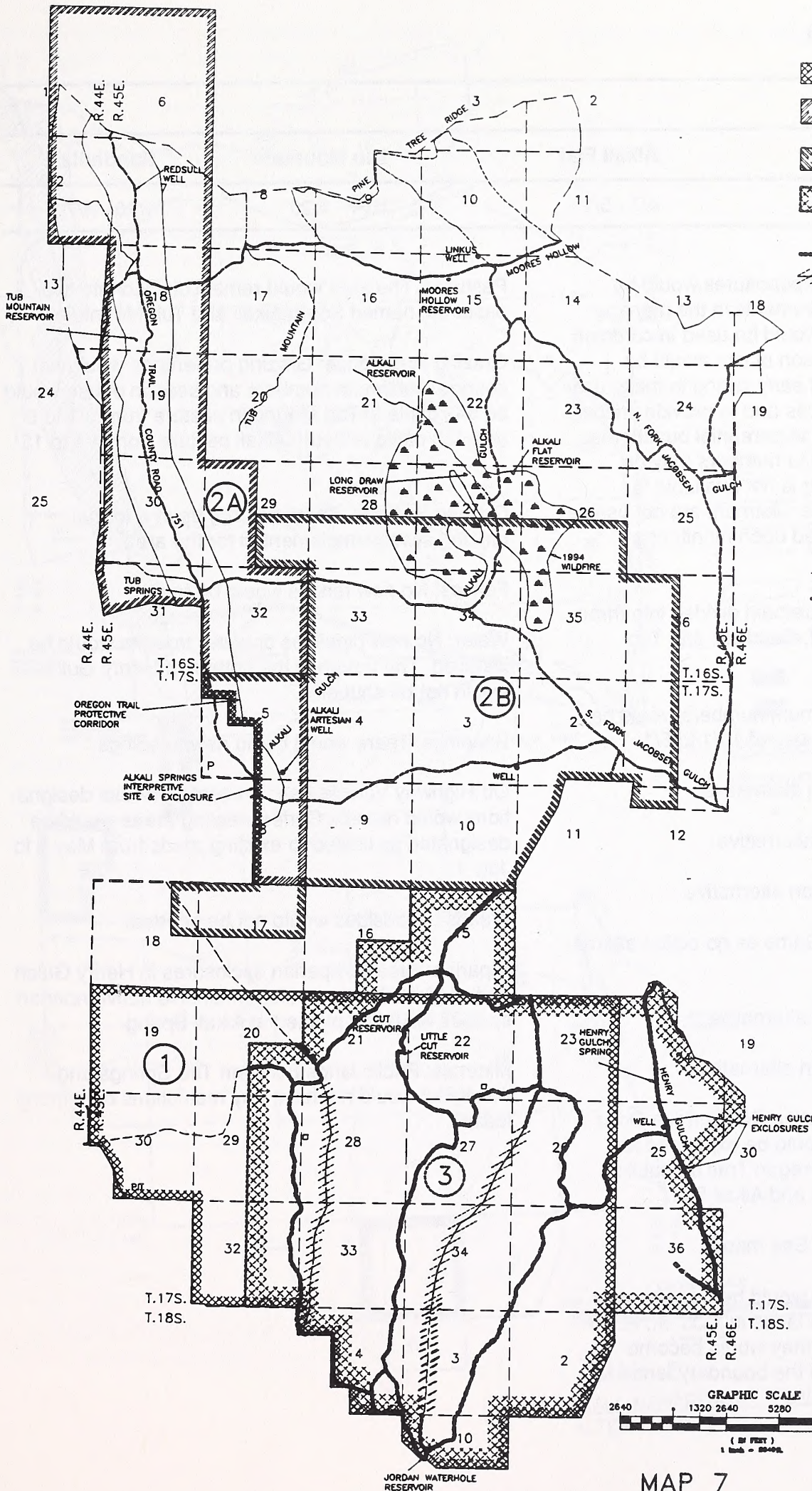
OFF HIGHWAY VEHICLE (OHV) USE DESIGNATIONS

-  1 OHV PLAY AREA - OPEN ALL YEAR
-  2 LIMITED TO EXISTING ROUTES
A OREGON NATIONAL HISTORIC TRAIL - YEAR LONG.
 B CURLEW NESTING HABITAT 5/1-7/1
-  3 LIMITED TO DESIGNATED ROUTES - YEAR LONG
SENSITIVE PLANT SPECIES HABITAT
-  DESIGNATED ROUTES
-  ROUTES CLOSED

NOTE: REMAINDER OF PUBLIC LANDS DESIGNATED OPEN TO O.H.V. USE YEAR LONG

LEGEND

-  1994 WILD FIRE
-  VEHICLE ROUTE
-  BOUNDARY
-  OREGON TRAIL 1/4 MILE EITHER SIDE OF TRAIL PROTECTIVE CORRIDOR
-  SPECIAL STATUS PLANT ENCLOSURE



MAP 7

SOUTH ALKALI MANAGEMENT PLAN
OHV PLAN ALTERNATIVE C

Grazing System:

Pasture	Alkali Flat	Tub Mountain	Sandhills
period	4/7 - 5/1	10/1 - 1/20	1/20 - 4/7

Under this alternative no expenditures would be made on new range improvements in the management area. The pastures would be used in common by all permittees. The season of use would be changed to fall, winter, and early spring to make use of the limited water resources and to provide critical growing season deferment to perennial bunchgrass communities. Adjustments to numbers may be necessary if sufficient water is not available for livestock and portions of the allotment are not usable. Adjustments would be based upon monitoring information.

Pastures: The area would remain divided into three pastures, named Alkali Flat, Sandhills and Tub Mountain.

Grazing Preference: Maximum numbers would be 977 cattle with a season of use of 10/1 to 5/1.

Fences: Same as no action alternative

Water: Same as no action alternative

Seedings: Same as no action alternative

Off-Highway Vehicle Use: Same as no action alternative

Weeds: Same as no action alternative

Riparian: Same as no action alternative

Minerals: The area proposed for No Surface Occupancy for mineral leases would be expanded to include the 2 miles of the Oregon Trail on public lands between Tub Springs and Alkali Flat.

Alternative E. No Action See map 2

Under this alternative there would be no change to the existing situation. If the lands in T. 17 S., R. 45 E., Section 8 are acquired, they would become Fenced Federal Range and the boundary fence would not be moved.

Pastures: The area would remain divided into two pastures, named South Alkali and Tub Mountain.

Grazing Preference: Grazing preference would not change. Maximum numbers and season of use would be 547 cattle in Tub Mountain pasture from 9/1 to 6/1 and 430 cattle in South Alkali pasture from 4/1 to 12/1.

Grazing System: There has not been a formal grazing system implemented for the area.

Fences: No new fences would be built.

Water: No new pipelines or water troughs would be installed. The trough in the bottom of Henry Gulch would not be shut off.

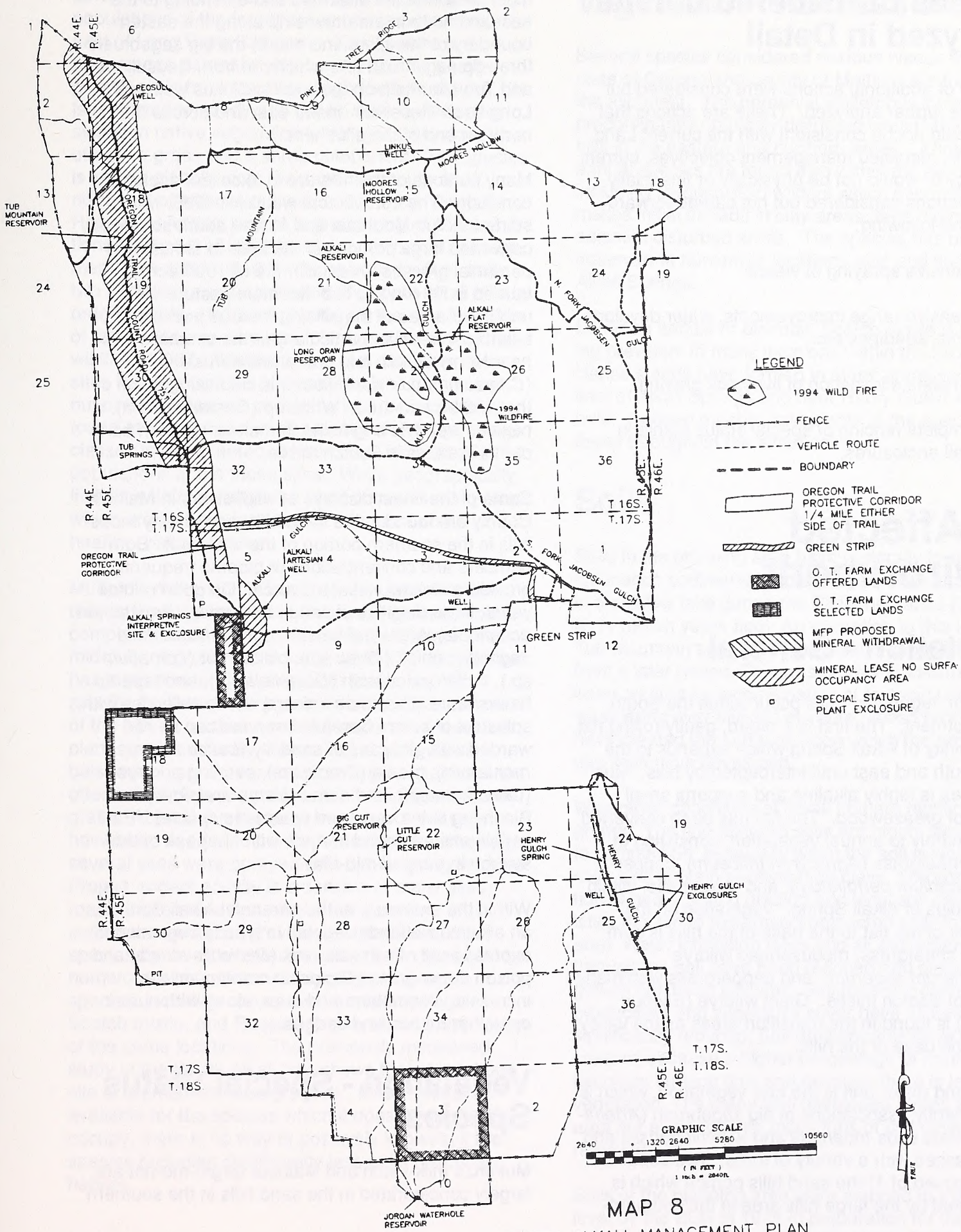
Seedings: There would be no new seedings.

Off-Highway Vehicle Use: Present OHV use designations would remain. Curlew nesting areas would be designated as limited to existing roads from May 1 to July 1.

Weeds: Roadsides would not be seeded.

Riparian: Present riparian exclosures in Henry Gulch and at Alkali Spring would remain. No native riparian species would be planted at Alkali Spring.

Minerals: Public lands between Tub Springs and Alkali Flat would not have any restrictions on mineral leases.



Actions Considered but not Analyzed in Detail

A variety of additional actions were considered but will not be further analyzed. These are actions that either would not be consistent with the current Land Use Plans, identified management objectives, current law, policy or would not be physically or financially viable. Actions considered but not carried forward include the following:

- Extensive spraying of weeds
- Extensive range improvements; water developments, seedings etc.
- Complete elimination of livestock grazing
- Complete fencing of special status plants in small enclosures.

III. Affected Environment

Vegetation - General

Two major vegetative units occur within the South Alkali Allotment. The first is a broad, gently rolling flat in the vicinity of Alkali Spring which expands to the north, south and east until intercepted by hills. Much of this area is highly alkaline and supports small pockets of greasewood. The flat has been converted almost entirely to annual vegetation, consisting of annual wheatgrass (*Agropyron triticeum*), peppergrass (*Lepidium perfoliatum*), and cheatgrass, within a mile radius of Alkali Spring. Vegetation on the remainder of the flat to the base of the hills is composed of cheatgrass, medusahead wildrye (*Taeniatherum asperum*), and peppergrass with many pockets of Scotch thistle. Giant wildrye (*Elymus cinereus*) is found in the transition areas as the valley rises to the base of the hills.

The second major unit is the hills vegetation, which is predominantly associations of big sagebrush (*Artemisia tridentata* subs. *tridentata* and *wyomingensis*) and bunchgrasses with a variety of forbs. Two subunits are composed of 1) the sand hills portion which is represented by the large hills area in the southern-

most portion of the allotment and extending to the east and north in a narrow strip along the eastern boundary of the allotment, and 2) the big sagebrush/three-tip sagebrush hills which run from Redsull Well and Tub Mountain on the west to Linkus well and Long Draw Reservoir on the east and across the northern end of the allotment.

Many portions of the hills are in excellent ecological condition. The 20,000 acre wildfire in 1986, which started at Tub Mountain and moved south-southeast, converted large portions of the area to annual and perennial grasses. A smaller fire of 1000 acres burned in 1994 in the Tub Mountain pasture. In unburned areas of the hills, numerous pockets of bitterbrush remain, particularly in the southern hills near Henry Gulch, and green rabbitbrush (*Chrysothamnus viscidiflorus*) is colonizing much of the 1986 burned area. Whitetop (*Cardaria draba*), a noxious weed, is beginning to make inroads in parts of this area, as is Scotch thistle.

Some of the finest displays of wildflowers in Malheur County are found in the sand hills, particularly those hills in the southern portion of the allotment. Both numbers and concentrations of blooms frequently provide a striking visual resource. On good rainfall years, large displays of sand penstemon (*Penstemon acuminata*), arrowleaf balsamroot (*Balsamorhiza sagittata*), phlox (*Phlox* sp.), biscuitroot (*Lomatium* sp.), Indian paintbrush (*Castilleja* sp.), and tapertip hawksbeard (*Crepis acuminata*) dot the hillsides with splashes of color. Careful observers can be rewarded with glimpses of sand lily (*Leucocrinum montanum*), brodia (*Brodia* sp.), evening primrose (*Oenothera* sp.), and nama (*Nama aretoides*). Blooming times vary from species to species. Earliest blooms are found in April, with the peak of the season in early to mid-May.

Within the enclosure at the perennial Alkali Springs, an alkaline wetlands vegetative type is beginning to express itself. Both saltgrass (*Distichlis stricta*) and poison arrow-grass (*Triglochin maritimum*) are increasing in numbers and area, along with numerous other rushes and sedges.

Vegetation - Special Status Species

Mulford's milk-vetch and Malheur forget-me-not are largely concentrated in the sand hills in the southern

portion of the allotment. Several small, isolated populations of the forget-me-not have been found east of Long Draw Reservoir. This species is a herbaceous perennial which completes its yearly growth cycle from March through the first of June. It is restricted to sandy and sandy-loam north-facing slopes in native vegetation which generally consists of both a grass and a shrub component. The species is known globally from the sand hills south and northeast of Vale, at one site south of the Owyhee River near Adrian, and at a small string of populations northeast of Payette, Idaho. A Habitat Management Plan was written for the species in 1986, and two exclosures were placed in the South Alkali hills in order to study effects of grazing on the species. One of the exclosures also was in an area burned by the wildfire of 1987. Transects and plot data from both sites indicate that the plant populations both in and out of the exclosures are doing well, with increases found at all sites and in all situations. A range of age classes is represented at both sites, indicating viable populations at the those sites. While geographically limited, within its range the plant occupies many sites which are suitable for it, and it appears to be a healthy, viable species.

Mulford's milk-vetch is in a more tenuous situation than is the forget-me-not. This small perennial plant completes its annual growth cycle from March until mid-July. It grows in the same sand hills complex but has a more extended range into Idaho, and its specific habitat is on very sandy sites at the summit of the hills or on their southerly aspects. Associated plant species virtually always include arrowleaf balsamroot, sand penstemon, and green rabbitbrush, often with Indian ricegrass and/or needle-and-thread grass. At least three known locations of the species have been seeded to crested wheatgrass historically; several sites were sprayed with 2,4-D during the Vale Project; rodent activity is extensive at many sites; road maintenance has eliminated a number of individuals along several miles; utilization of the species by unknown predators has been observed at numerous sites; and a variety of exotic annual species, including cheatgrass, tumblemustard, Scotch thistle, and Russian thistle, also occupy many of the same locations. The previously mentioned study in the South Alkali hills shows that at least one site is dramatically losing plants. Much habitat is available for the species which it does not currently occupy; there is no way of positively knowing if the species occupies significantly less of its historical habitat.

Vegetation - Noxious Weeds

Several species considered noxious weeds by the state of Oregon and county of Malheur are found in the allotment. The perennial whitetop is found predominantly on highly disturbed sites in the sand hills in the eastern and northern areas. Three annual species are found also within the allotment, including medusahead wildrye which generally makes initial inroads in clay areas, then moves into adjacent disturbed areas. The species has been observed at numerous locations east and south of Alkali Springs.

Either an annual or biennial, Scotch thistle is becoming prevalent in many locations within the allotment. Dense stands have formed in many areas south and east of Alkali Springs and near Henry Gulch water hole. Isolated patches and plants of the species are found throughout the allotment.

Soils

Soils in the planning area have generally formed from tuffaceous sedimentary rocks which were deposited in a shallow lake during the Pliocene period (3 million to 11 million years ago). An exception to this is the Tub Mountain area which consists of a basaltic flow from a later period. The present day landforms have been created by a combination of tectonic uplift and weathering over millions of years. These processes have created the surfaces upon which the present day soils have developed.

Watershed conditions at Alkali Flat are highly degraded. The fine textured soils are highly susceptible to compaction, especially when the soil is wet. These soils also contain swelling type clays. The combination of heavy spring grazing and local soil characteristics has led to extremely compacted soils in this area. Water infiltration rates and air movement through the soil have been reduced and plant root growth has been inhibited. Soil moisture content, site productivity and vegetative cover have all been significantly reduced. Soil erosion rates have increased because a higher percentage of rainfall becomes surface flow and because there is less vegetation. The many well developed gullies in this area are evidence that many tons of soil have been removed.

Soils of the planning area were mapped to the family level by the BLM in 1976 in preparation for the Ironside EIS. The following soil units were identified:

Xeric Torrifluvent--Fine silty, mixed, nonacid, mesic

These young soils developed in flat lying areas along drainages where there has been frequent flood deposition. They are poorly consolidated, fine textured and highly erosive. Many well developed gullies are located within these soils.

Xerollic Camborthid--Coarse silty, mixed, mesic

These sandy textured soils are found on areas of low slope gradient on alluvial fans.

Xerollic Camborthid--Coarse loamy, mixed, mesic

These are the sandy textured soils that are found in the Sand Hills area.

Xerollic Haplargid--fine loamy, mixed, mesic

These are fine textured soils found on upper slopes and ridge tops.

Lacustrine breaks

These areas are very steep and highly erosive and have minimal soil development.

Aridic Argixeroll--fine, montmorillonitic, mesic

These fine textured, highly erosive soils are found on nearly flat lying areas such as Alkali Flats. The expanding clays within these soils cause them to have poor infiltration rates and high surface runoff rates. Many drainages in these soils have well developed gullies.

Hydrology/Riparian

The planning area is located on the divide between Willow Creek and the Snake River to the east. Most of the western and central portions of the area drain into Willow Creek. This covers approximately 70% of the planning area. East of the divide, Moors Hollow and the South Fork of Jacobson Gulch drain approxi-

mately 10% of the area into the Snake River. The extreme northwest corner of the area drains to the north into Birch Creek which enters the Snake River near Farewell Bend. The southern 15% of the area drains into the Malheur River via Henry Gulch and other unnamed ephemeral drainages.

Perennial surface water is present in few locations. The only perennial stream in the management area is an approximately 1.25 mile segment of Henry Gulch. An enclosure was built in 1989 to protect a spring and about 0.75 miles of stream. Within the enclosure, herbaceous and woody riparian species such as willow and cottonwood are beginning to stabilize the streambanks. Downstream from the enclosure, the stream is intermittent down to a second spring, which is also fenced. Outside the enclosures, there is little to no riparian vegetation, active bank cutting is occurring, and the stream is considered to be non-functioning. The natural function of riparian vegetation communities adjacent to intermittent and perennial streams includes bank stabilization, sediment filtering, bank building, water storage and aquifer recharge.

Tub Springs and Alkali Springs are located in the west central area within the Tub Mountain and Alkali Flat pastures respectively. Alkali Spring is protected from livestock grazing by a one acre enclosure, with associated wetlands outside the enclosure. Tub Springs has no enclosure.

Many drainages within the planning area have been deeply incised by gully erosion. Most of the Alkali Gulch and Henry Gulch drainage systems have well developed gullies which range up to 30 feet deep. Many unnamed drainages in the Sand Hills area and Alkali Flats have also been deeply incised. While most gully erosion in the planning area dates from sixty or more years ago, some active head cutting remains. Development of these gullies has resulted in lowering of the adjacent ground water levels and a change of vegetation to species which are favored by more droughty conditions.

Livestock water is supplied by several wells scattered throughout the area, including an artesian well located about 1/2 mile east of Alkali Springs.

Twelve reservoirs have been constructed to collect surface flows for livestock use. Few of these hold water for periods of time greater than a few weeks in the spring.

Wildlife - General

South Alkali contains habitat for many species of wildlife, including mule deer, Rocky Mountain elk, pronghorn antelope, chukar, Hungarian partridge, coyote, badger, raptors, lizards and neotropical migratory songbirds. Winter populations of mule deer can reach 750-1000 and antelope numbers have been reported as high as 400-500. Chukar and Hungarian partridge are scattered in suitable habitat largely associated with complex topography and draws.

As a result of wildfires, there is little shrub cover in the northern portions of the allotment for winter forage and cover. Mule deer move down to the adjacent private farmlands in winter, and can cause extensive damage. Oregon Department of Fish and Wildlife has spent about \$2500 since 1989 on fence repair and other damage on private lands. Local economic losses from depredation to crops on private lands are usually not reported and therefore cannot be estimated.

This is an important long-billed curlew nesting area. They are found in the annual, low elevation, poor condition rangelands in spring and early summer. Restrictions for long-billed curlew in the Northern Malheur Management Framework Plan include no vegetation manipulation 1/4 mile each side of the Oregon Trail. OHV use is restricted in curlew habitat from April 1 to July 1.

Wildlife - Special Status Species

There are no wildlife species in the management area listed as threatened or endangered. Burrowing owls, a Category 2 candidate species, nest within the allotment. The species is found in the annual, poor condition rangelands in lower elevations. Ferruginous hawks, a Category 2 candidate species, have also nested in the area. Nesting areas for ferruginous hawks are variable and depend on the abundance of prey species. The northern sagebrush lizard, a Category 2 candidate species, is associated with sagebrush. Although there are no records of the species, it could be found in the area. Habitat for the desert horned lizard, a Bureau Sensitive species, is found in the Sand Hills pasture.

Recreation and Visual Resources

Recreation activities consist primarily of dispersed hunting with access via the area's existing network of maintained and primitive roads, and of motorized vehicle travel along the Oregon National Historic Trail route, with a stop at the trail's Alkali Springs Interpretive Site. The single interpretive panel in the fenced one acre interpretive site is accessed by and adjacent to Malheur County Road 751, ("Old Oregon Trail Road"), on the west edge of the planning area. Low road maintenance of Road 751 and the area's soil characteristics naturally restricts most vehicle use on Road 751 to dry road conditions during the summer, with posted signs recommending the use of high clearance vehicles. The interpretive site received an estimated 1,200 visitors during 1994.

Other dispersed recreation activities in the area include horseback riding, nature photography and driving for pleasure. There is nominal evidence of off-road driving activity in the area. Colorful displays of spring wild flowering in the southern extent of the planning area provides some of the best opportunities to enjoy this activity in northern Malheur County.

BLM's Northern Malheur Management Framework Plan (MFP) determined off-highway vehicle (OHV) use designations for public lands of the area (see map 2). Currently, a "Limited" designation restricts vehicle use year-long to Road 751 within a corridor of the Oregon National Historic Trail. In September, 1993 an emergency OHV closure limits motorized vehicle use to designated roads on 480 acres within the Sand Hills pasture to provide protection for the Mulford's milk-vetch, a federal candidate species being considered for listing under the Endangered Species Act. The rest of the area has an "Open" vehicle use designation, allowing for year-long vehicle travel on public lands. A southern portion of the "Open" area within the Sand Hills pasture is designated the Malheur ORV Play Area, set aside for BLM authorized competitive ORV race events. There has been no request for competitive ORV events for this or other locations for over 10 years within Malheur Resource Area.

The majority of the planning area is within a BLM Visual Resource Management (VRM) Class IV zone, characterized by a landscape of relatively low scenic quality and visual sensitivity. The management objective for Class IV lands allows for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape may be high, may dominate the view

and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements of line, form, color and texture.

Public lands within a half mile of the Oregon Trail are managed to maintain their existing characteristic landscape as much as possible. Public lands observable up to five miles from U.S. Highways 20 and 26 have a higher level of visual sensitivity, and are managed to meet VRM Class III management objectives. The permissible level of change of the characteristic landscape should not exceed moderate, with the objective to partially retain the landscape's existing natural character. Surface disturbing activities may attract attention but should not dominate the view of the casual observer. Any changes should repeat the basic elements in the predominate natural features of the characteristic landscape.

Cultural Resources and the Oregon Trail

Both prehistoric and historic sites are located in the South Alkali Allotment. The presence of Native American people in this area is evident by archaeological sites located around several springs. The prehistoric sites in this area reflect a pattern of long continued use and adaptive changes to a distinct ecosystem with a changing climate. The South Alkali Allotment appears to be within the territory of the Koa'aga'itoka subgroup of the Northern Paiute. These people lived in small winter villages located near permanent water sources and in seasonal camps. The subsistence pattern was based on the utilization of a wide variety of plants and animals and the mobility to follow these resources as they became available.

Initial exploration into Malheur County by Euro-Americans began after the Lewis and Clark Expedition of 1804-1806. Ramsey Crooks took nineteen men and followed the Snake River through Malheur County into Hells Canyon in 1811-1812. Peter S. Ogden traveled over portions of Malheur County during five expeditions between 1824-1829.

The route of the Oregon Trail passes through Malheur County and is the main travel route through the South Alkali Allotment area. "In 1841, 32 emigrants arrived in Oregon and 107 followed the next year. In 1843, the "Great Migration" of 875 emigrants opened the trail for an increasing number of travel-

ers. Over 1750 people arrived in 1844, 1500 in 1846, 4500 in 1847 and 1,000 in 1848" (National Park Service, 1981:12). From Vale, the route of the Oregon Trail heads north to 5th Avenue east and is well marked as the county road. The lunch spot for the first day's travel from Vale is located at Alkali Spring, marked by an interpretative panel. The route continues northward to Willow Spring and then heads northeast to Birch Creek and Farewell Bend. In 1993, a fire hearth was exposed during county road grading activities adjacent to Tub Springs. Radiocarbon dates on the charcoal samples collected from the hearth yielded two dates: 1680-1760 and 1800-1940 (calibrated results 95% probability). These dates support the premise that the same hearth had been used by both Native Americans and Euro-Americans along a well traveled route through the area.

Livestock Grazing

The South Alkali Allotment was formed from the Alkali Allotment by rangeland agreement in 1988. With the completion of the Ironside Environmental Impact Statement, Alkali Allotment was facing a 43% reduction in active preference. After further monitoring and consultation a Stewardship Plan was signed in 1982. Under that plan the users of the present South Alkali Allotment were licensed with a 10% reduction in active use. In 1986 the Bureau issued a decision canceling the stewardship plan since it was not being followed. After further consultation the decision was vacated and the Alkali Allotment was divided into the present two allotments, South Alkali and Alkali Springs, with a revised Stewardship Plan in effect for the Alkali Springs Allotment. There has not been a livestock management plan for the South Alkali Allotment.

Prior to 1986, the South Alkali area was one pasture and livestock were turned onto the annual range around Alkali Flat and Tub Springs in the spring. Cattle drifted and were pushed to perennial range in the sand hills and higher elevation areas of Tub Mountain by the middle of June. Actual use records from back to 1979 indicate that livestock use took place from March to December with up to 7,000 AUMs. Traditionally the entire area was grazed season-long. Cattle would make initial use at the limited watering spots within the allotment, and as the season progressed would move out in concentric circles from the water sources. Numerous attempts to drill wells and provide water to the sandy hill areas to the south and east of Alkali Spring met with failure, and the more inaccessible portions of the hills generally received late season or no grazing.

There has not been a formal grazing system implemented for this area. The area was fenced into two pastures (Tub Mountain and South Alkali) in 1986. Since that time the Tub Mountain pasture has been used primarily by one permittee (Roche) from September until June with a maximum permitted number of 547 cattle. The South Alkali pasture has been used by the other permittees from April through December with a maximum permitted number of 430 cattle.

In 1993 a fence was completed which makes two pastures out of the South Alkali pasture (Alkali Flat, Sandhills-Henrys Gulch). Pastures, estimated public land carrying capacity and total acreage are listed below:

Pasture	Estimated AUMs	Acres
Alkali Flat	740	4,500
Sandhills-H.G.	2160	13,900
Tub Mountain	3700	19,800

Present range improvements (fences, waters) are depicted on map 2.

The permittees and their grazing preference are as follows:

Permittee	Active Aums	Suspended Aums
Lamar Roche	3830	426
Tim McBride	1030	118
Kindschy Ranch	1030	118
Gary Pozzi	947	105

Lands and Realty

The public land within the proposed South Alkali Management Plan area is open to the operation of the public land laws, including the mining laws. The area is physically accessible via existing roads and trails owned or controlled by BLM or Malheur County.

Idaho Power has a 12.5 kv electrical distribution line in the W1/2SE1/4 of Section 24 and the W1/2E1/2 of Section 25, T. 17S., R. 45E., W.M.

There is an 80 acre withdrawal located within the planning area that was withdrawn by Secretarial Order of February 18, 1937 for the Bureau of Reclamation for the Owyhee River Project. The 80 acre withdrawal is located in the S1/2NW1/4, Section 10, T. 18S., R. 45E., W.M.

The Bureau of Reclamation, through the withdrawal review process has identified a portion of the withdrawal that is not needed for project purposes and will be relinquished to the BLM to administer. The lands that are needed for project purposes are five acres containing an active gravel pit located within the NW1/4SE1/4NW1/4 and a 300 foot linear withdrawal on each side of the Owyhee Canal (North Canal Lateral) which will remain in withdrawal status. Approximately 61.20 acres will be relinquished to the BLM to administer.

The 1983 Northern Malheur Management Framework Plan recommended that Tub Mountain had the potential to be designated a communication site. To date, Tub Mountain has not been designated a communication site, and the need for a communication site at Tub Mountain has not been demonstrated.

Minerals

The United States Geological Survey completed a mineral assessment in 1994 which included the planning area. The area was rated as high for the potential occurrence of epithermal gold deposits, uranium and geothermal resources. There is moderate potential for the occurrence of placer gold and low potential for the occurrence of sulfide gold, nickel, chromium and asbestos. The U. S. Bureau of Mines identified known occurrences of sodium, potassium, gold, geothermal resources and sand and gravel.

The planning area is currently open for location of mining claims. A one half mile wide corridor for ten miles along the Oregon Trail was recommended for mineral withdrawal in the Northern Malheur Management Framework Plan. This proposed withdrawal includes lands along the trail route between Tub Springs and Birch Creek on the north. To date, this withdrawal has not been completed. Current mining claims are concentrated around the Alkali Springs area. Claims are located in T. 16S., R. 45E. Section 32 and 33 and T. 17S., R. 45E. Sections 4, 5, 8, 9. Within the past five years exploration operations have been conducted in these areas. Several exploration wells have been drilled to identify potential mineralized zones. The remainder of the South Alkali Allotment is not currently claimed.

Although there are no active mineral leases, the planning area is open for mineral leasing. The lands in the Oregon Trail corridor can be leased only with a No Surface Occupancy stipulation.

Gravel is sold from a community pit located in SW1/4NE1/4, Section 4, T. 18S., R. 45E., W.M.

IV. Environmental Consequences

Alternative A Environmental Consequences

Vegetation - General

The creation of an additional pasture, Henry Gulch Seeding, makes possible a rotation grazing system in the southern part of this allotment which is generally believed to be beneficial to vegetation. A pasture for the seeding plus additional water development in the proposed seeding pasture will greatly improve livestock distribution in the seeded area and will make more efficient use of the existing seeding.

Whether or not the two years of deferment for the Sandhills Pasture is sufficient for bunchgrass species to recover from the one year of concentrated spring/summer grazing is questionable and would depend in part on yearly moisture regimes that would promote growth. Providing additional water in native vegetation sites will result in zones of more concentrated livestock grazing, again which may not be able to favorably respond by recovering vigor with only two years' rest. Native perennial vegetation may decline in both vigor and numbers at some of these concentrated-use sites.

Native vegetation in the Tub Mountain Pasture would probably remain static under this alternative. In high moisture years with excellent regrowth potential on the native grasses, some improvement in vigor and numbers of native bunchgrasses may be expected, based on the shortened spring season and the use of alternative waters. In the frequent drought years, grazing until May 1 in the Tub Mountain pasture will be too late to permit regrowth of the bunchgrasses and some damage to plant vigor may occur. No mortality would occur to established bitterbrush plants with this grazing system, but they would continue to be hedged and young plants may have difficulty becoming established or increasing in size because they would be grazed during the entire winter period.

Vigor of native perennial bunchgrasses in the South Alkali Pasture would be maintained with the rotational grazing, and substantial amounts of litter from production of annuals would remain on site in good growing years.

Under this alternative, additional acres at Alkali Spring would receive total protection from disturbance, resulting in an expanded wetlands area composed of alkaline vegetation. Recovering alkaline wetlands are relatively rare, and vegetation succession in the enclosure would provide much botanical interest.

Vegetation - Special Status Species

The two years of deferred grazing in the Sandhills Pasture will give Malheur forget-me-not two entire growing season to complete its yearly growth cycle. Mulford's milk-vetch will nearly complete its growth cycle, although some plants will probably be green when livestock are turned into the pasture on July 1. Both species will be vulnerable to grazing during Year 3, when grazing occurs from April 1 to August 1. The Malheur forget-me-not does not appear to be palatable. However, adverse impacts could occur due to concentrated livestock use areas near the plant sites. Mulford's milk-vetch is palatable to livestock, based on observations in the West Page Seeding in the North Harper Allotment, and the concentration of livestock in the Sandhills Pasture in the spring/summer may result in numerous plants ingested, resulting in some mortality particularly in drought years when plants are already stressed.

Closure of the Henry Gulch water trough would protect and enhance a known site of Malheur forget-me-not near the trough where heavy use has resulted in only a few remaining individuals. The site may be expected to increase in both numbers and vigor of the forget-me-not.

Vegetation - Noxious Weeds

The rotational and winter use grazing schemes should result in long-term maintenance of vigor on established native species in the Tub Mountain Pasture, Alkali Flat area and the Sandhills Pasture, resulting in no newly disturbed areas for weeds to colonize.

Soils

Addition of one new pasture to the grazing system would allow improved control over distribution of livestock, but not as much as under Alternative B. This improved management may improve ecological condition and reduce soil erosion rates throughout the planning area.

Control of livestock water sources in the Tub Mountain Pasture and the addition of five new water

troughs in the planning area would benefit watershed conditions by improving distribution of livestock. However, each new water trough would create an area of concentrated livestock use where soil compaction and erosion would increase.

Discontinuing use of the Henry Gulch water trough would allow soil erosion and compaction to decrease in that area of livestock concentration.

This alternative proposes spring grazing one year out of three in Alkali Flat which is the same as Alternative B. However, improvement in soil compaction would likely be more under Alternative A than Alternative B due to earlier turnout under the B Alternative.

Seeding of brush in the Tub Mountain Pasture would have little effect upon watershed conditions in that pasture.

Road maintenance practices which result in improved road drainage would reduce soil erosion rates. Roads are one of the primary contributors to soil erosion and sediment production. Practices such as waterbars, drain dips and out-sloping would reduce the concentrating effects that roads have on surface flows and reduce soil erosion.

Expansion of the area designated for No Surface Occupancy along the Oregon Trail corridor would eliminate potential impacts to soils and water that would result from mineral development on 650 acres.

Hydrology/Riparian

The riparian area inside the Henry Gulch enclosure should continue to improve. An upland trough in Henry Gulch Seeding and shutting off the trough near the enclosure would result in less cattle use in the riparian area outside the enclosure. In addition, the pasture would receive spring use two years out of three. This should result in gradual improvement in the riparian vegetation and condition of the stream outside the enclosure.

The expansion of the Alkali Spring enclosure to include most of the associated wetlands on public land would result in improvement of riparian condition. Presently, a seed source for some riparian vegetation is lacking, though some herbaceous riparian species are found within the enclosure. This could result in slower recovery than would occur under Alternatives B and C.

Wildlife - General

Winter browse and cover for big game species would increase in the Tub Mountain pasture. There would still be a lack of bitterbrush for winter browse, making this alternative less beneficial than Alternatives B and C. Mule deer would still migrate through the area to private lands, especially during winters with deep snow. However, there should be some lessening in the amount of time spent on private lands, resulting in less economic loss. Planted shrubs are more likely to be totally lost in a future wildfire than under Alternative B because the species planted would be unlikely to resprout after an intense fire. Therefore, the present situation would be likely to occur again.

Other wildlife species would benefit from increased forage and cover. Roadside seedings would decrease the likelihood of further weed invasion degrading wildlife habitat. Seedings would also provide more of a fire break in the Tub Mountain Pasture. This could prevent the loss of some shrub cover in a wildfire situation, which would benefit big game and other shrub-dependent species.

Wildlife - Special Status Species

Nesting areas for long-billed curlews would be protected from OHV use under this alternative. Since burrowing owls and ferruginous hawks, both Category 2 candidate species, also nest in areas used by long-billed curlews, they would also be protected. Seedings would be designed to avoid disturbance to nesting for these species. Increased shrub cover would eventually decrease the habitat for long-billed curlew on the lower slopes of Tub Mountain. However, the majority of the nesting area is in the flats where shrubs will not be planted. Therefore, the impacts would be minimal. Shrub cover would probably lessen the desirability of those lower slopes for ferruginous hawk nesting. There should be no other negative impacts to those species. An increase in sagebrush should improve potential habitat for the northern sagebrush lizard. There would be no protection for desert horned lizards from OHV use in the Sandhills pasture.

Recreation and Visual Resources

Expansion of the Alkali Springs interpretive site enclosure and the south extension of the no surface occupancy stipulation to include the interpretive site would provide a level of protection for recreational enjoyment of the historic trail's setting and the capital improvements of the interpretive site. Opportunities for wildlife observation would be enhanced with

improved riparian habitat at Alkali Springs within the enlarged enclosure. Dispersed recreational uses would remain available with no significant impacts on them. However, substantial diverse wildflower habitats in the sand hills would remain subject to adverse impacts caused by any off-road driving of motorized vehicles.

The new range improvement facilities would slightly visually impact the characteristic landscape at specific locations, presenting a contrast in natural settings, while meeting VRM Class IV objectives for the area. The visual setting at Alkali Springs would be enhanced with the return of a more natural setting within the enlarged enclosure. Extensive or repetitive vehicle tracking on dense wildflower habitat would cause an adverse visual impact in these settings.

Cultural Resources and the Oregon Trail

A Cultural Resource survey would be conducted prior to any ground disturbing activities. A survey report would be submitted to the State Historic Preservation Office (SHPO) and concurrence received prior to the construction of the proposed project. If cultural resources were located, mitigation or avoidance measures would be implemented.

See Recreation and Visual Resources for a discussion of this Alternative on Alkali Spring Interpretative Site.

Livestock Grazing

Costs for Range Improvements would be shared by the Malheur County Advisory Board, BLM range improvement funds and by the grazing permittees. Costs for range improvements would be approximately \$3,000 for fencing and \$40,000 for water development.

Permittees would be affected by the one time shared cost of the new improvements and a slight long term cost in the form of maintenance of those improvements. There would be a very slight increase in labor due to the herding requirements and pasture moves under the new grazing system.

Lands and Realty

There would be no effect on lands and realty. The public lands would be open to the operation of the public land laws.

Minerals

The Oregon Trail corridor would remain available for mineral leasing. Any leases that would be made available would be leased with a stipulation that would allow No Surface Occupancy of portions of leases within the corridor. The portions within the corridor could be accessed from other lands. For example, any geothermal resources that may be identified under the corridor could be accessed with wells located on other lands using angle drilling techniques. The area has been rated as having a high potential for the occurrence of geothermal resources.

Alternative B Environmental Consequences

Vegetation - General

The creation of two additional pastures, Henry Gulch Seeding and Sandhills East, makes possible a more complex grazing system in the southern portion of this allotment than Alternative A. A pasture for Henry Gulch seeding along with the additional water developments will greatly improve livestock distribution in the seeded area and will make more efficient use of the seeding. Whether or not the two years of deferment for the Sandhills West Pasture is sufficient for bunchgrass species to recover from the one year of concentrated spring grazing is questionable and would depend in part on yearly moisture regimes that would promote growth. Providing additional water at one native vegetation site will result in a zone of more concentrated livestock grazing, again which may not be able to favorably respond through recovering vigor to only two years' rest. Native perennial vegetation may decline in both vigor and numbers at this concentrated use area.

Native vegetation in the Sandhills East Pasture would receive no growing season use. Due to the proposed late season grazing treatment, it is expected that this pasture would make substantial improvement in both numbers and vigor of all native bunchgrass species under this alternative.

Native vegetation in the Tub Mountain Pasture would probably remain static under this alternative. In high moisture years with excellent regrowth potential on the native grasses, some improvement in vigor and numbers of native bunchgrasses may be expected, based on the shortened spring season and the use of

alternative waters. In the frequent drought years, grazing until May 1 in the Tub Mountain pasture will be too late to permit regrowth of the bunchgrasses and some damage to plant vigor may occur. Established bitterbrush plants would prosper with this grazing system, and young plants would become established because of the lessened use period during the critical late summer-fall season.

Vigor of native perennial bunchgrasses in the South Alkali Pasture would be maintained with the rotational grazing, and substantial amounts of litter from production of annuals would remain on site in good growing years.

The entire acquired parcel near Alkali Springs would receive protection from grazing under this alternative. The alkaline wetlands would recover their vegetative composition and cover. Such alkaline wetlands are relatively rare, and vegetation succession in the enclosure would provide much botanical interest.

With the expansion of the Henry Gulch enclosure, additional protection from all uses would permit unimpeded vegetation recovery.

Vegetation - Special Status Species

Because all known sites of Mulford's milk-vetch in this allotment and numerous sites of Malheur forget-me-not occur in Sandhills East Pasture, this alternative is highly beneficial to both species. The full growing season deferment of the pasture would give both plant species the opportunity to complete their annual growth cycles before livestock use was made of the pasture, resulting in no impact to the carbohydrate stores of the species for the next year's growth. The only impact from this kind of grazing may be mechanical, and would result if concentrated use areas disturbed specific plant sites.

Closure of the Henry Gulch water trough would protect and enhance a known site of Malheur forget-me-not near the trough where heavy use has resulted in only a few remaining individuals. The site may be expected to increase in both numbers and vigor of the forget-me-not.

Vegetation - Noxious Weeds

The rotational and winter use grazing schemes should result in long-term maintenance of vigor on established native species in the Tub Mountain Pasture, Alkali Flat area and the Sandhills West Pasture, resulting in no newly created areas for weeds to colonize. The late fall use in Sandhills East

Pasture should permit recovery of native vegetation in both vigor and numbers so that ultimately, many sites still available for colonization by noxious weeds would have returned to strong native plant communities.

Soils

This alternative would provide the most control over livestock grazing, and would have the best potential for improvement in the watershed condition.

Control of livestock water sources in the Tub Mountain Pasture and addition of five new water troughs in the planning area would benefit watershed conditions by improving distribution of livestock. However, each new water trough would create an area of concentrated livestock use where soil compaction and erosion would increase.

Discontinuing use of the Henry Gulch water trough would allow soil erosion and compaction to decrease in that area of livestock concentration.

This alternative proposes spring grazing one year out of three in Alkali Flat which is the same as Alternative A. However, improvement in soil compaction would likely be more rapid under Alternative A because of later turnout dates.

Seeding of brush in the Tub Mountain pasture would have little effect upon watershed conditions in that pasture.

Road maintenance practices which result in improved road drainage would reduce soil erosion rates. Roads are one of the primary contributors to soil erosion and sediment production. Practices such as waterbars, drain dips and out-sloping would reduce the concentrating effects that roads have on surface flows and reduce soil erosion.

The 160 acre enclosure at Alkali Spring would benefit the compacted soils in the portion of Alkali Flat that it would cover. By eliminating livestock, natural processes would ameliorate the compacted soils and annual weeds would provide a higher level of soil protection than under the other alternatives.

Expansion of the area designated for No Surface Occupancy along the Oregon Trail corridor would eliminate potential impacts to soils and water that would result from mineral development on 650 acres.

Hydrology/Riparian

The expanded riparian enclosure at Henry Gulch would include the area between the two existing enclosures. This would add approximately 3/8 mile to the length of the areas currently excluded from cattle use. Recovery of riparian vegetation and potential of the area outside the present enclosures could occur faster than under the other alternatives. However, early spring grazing in Vale District has been shown to allow riparian recovery nearly as well as complete rest.

The expansion of the Alkali Spring enclosure to 160 acres would include all of the potential wetlands and would result in improvement of riparian condition. Planting native riparian vegetation would speed recovery of the riparian area compared to Alternative A.

Wildlife - General

Winter browse and cover for big game would increase in the Tub Mountain pasture. More bitterbrush, which is an important winter browse species, would be available than under Alternatives A, D, and E. Although wintering mule deer would still migrate through the area to private lands, more browse and cover would be available on public lands to delay them. As bitterbrush and other shrub cover increased, depredation to crops on private lands should decrease. Planting fire resistant species such as green rabbitbrush and three-tip sagebrush in the Tub Mountain pasture would decrease the likelihood of the present situation recurring. Therefore, the shrub cover would be more likely to increase over the long term.

Other wildlife species would benefit from increased forage and cover. Roadside seedings would decrease the likelihood of further weed invasion degrading wildlife habitat. Seedings would also provide more of a fire break in the Tub Mountain pasture. This could prevent the loss of some shrub cover in a wildfire situation, which would benefit big game and other shrub-dependent species.

Wildlife - Special Status Species

Nesting areas for long-billed curlews would be protected from OHV use under this alternative. Since burrowing owls and ferruginous hawks, both Category 2 candidate species, also nest in areas used by long-billed curlews, they would also be protected. Seedings would be designed to avoid disturbance to

nesting for these species. Increased shrub cover would eventually decrease the habitat for long-billed curlew on the lower slopes of Tub Mountain. However, the majority of the nesting area is in the flats where shrubs will not be planted. Therefore, the impacts would be minimal. Shrub cover would lessen the desirability of those lower slopes for ferruginous hawk nesting. There should be no other negative impacts to those species. An increase in sagebrush should improve potential habitat for the northern sagebrush lizard. There would be no protection for desert horned lizards from OHV use in the Sandhills pasture.

Recreation and Visual Resources

Expansion of the Alkali Springs interpretive site enclosure and the south extension of the No Surface Occupancy stipulation to include the interpretive site would provide a level of protection for recreational enjoyment of the historic trail's setting and the capital improvements of the interpretive site. Opportunities for wildlife observation would be enhanced with improved riparian habitat at Alkali Springs. Long term, improved wildlife habitat in the Tub Mountain pasture could enhance big game hunting opportunities. Other dispersed recreational uses would remain available with no significant impacts on them. However, substantial diverse wildflower habitats in the sand hills would remain subject to adverse impacts caused by any off-road driving of motorized vehicles.

The new range improvement facilities would slightly visually impact the characteristic landscape at specific locations, presenting a contrast in natural settings, while meeting VRM Class IV objectives for the area. The visual setting at Alakli Springs would be enhanced with the return of a more natural setting within the enlarged enclosure.

Cultural Resources and the Oregon Trail

A Cultural Resource survey would be conducted prior to any ground disturbing activities. A survey report would be submitted to the State Historic Preservation Office (SHPO) and concurrence received prior to the construction of the proposed project. If cultural resources were located, mitigation or avoidance measures would be implemented.

See Recreation and Visual Resources for a discussion of this Alternative on Alkali Spring Interpretative Site.

Livestock Grazing

Costs for Range Improvements would be shared by the Malheur County Advisory Board, BLM range improvement funds and by the grazing permittees. Costs for range improvements would be approximately \$10,500 for fencing and \$37,000 for water development.

Permittees would be affected by the one time shared cost of the new improvements and a slight long term cost in the form of maintenance of those improvements. There would be a very slight increase in labor due to the herding requirements and pasture moves under the new grazing system. One of the permittees would be required to find alternative feed or pasture during the period 10/1 to 12/1, it would be possible to offset this loss by increasing numbers of cattle during the authorized period (12/1 to 5/1). This would probably not be a viable action to the permittee as it may not be practical to increase the base herd size on an overall operation. If the permittee was not able to increase numbers this alternative would represent a loss of 29% of usable preference.

Lands and Realty

There would be no affect on lands and realty. The public lands would remain open to the operation of the public land laws.

Minerals

The Oregon Trail corridor would remain available for mineral leasing. Any leases that would be made available would be leased with a stipulation that would allow No Surface Occupancy of portions of leases within the corridor. The portions within the corridor could be accessed from other lands. For example, any geothermal resources that may be identified under the corridor could be accessed with wells located on other lands using angle drilling techniques. The area has been rated as having a high potential for the occurrence of geothermal resources.

Alternative C Environmental Consequences

Vegetation - General

The creation of an additional pasture, Henry Gulch Seeding, makes possible a rotation grazing system in

the southern part of this allotment. Rotation grazing systems are generally believed to be beneficial to vegetation. The seeding fence as well as additional water development in the proposed seeding pasture will greatly improve livestock distribution in the seeded area and will make more efficient use of the existing seeding. Because the seeding receives growing season use yearly under this alternative, it may decline in both vigor and numbers of the crested wheatgrass plants, even with the rotational use. Total utilization levels and climate would play major roles in the fate of the seeding.

Complete protection from livestock use would maintain all natural processes in the Sandhills East Pasture. No grazing would result in recovery of native bunchgrass species and all native species to the fullest extent possible. The vegetative communities of Great Basin wildrye would remain in good condition where they are currently found, and they could be expected to reach their full potential in a relatively short period of time due to current seed availability and beginning recovery following the 1986 wildfire. Vegetative cells units for Owyhee Uplands as identified in the Oregon Natural Heritage Plant Database (1993) which are represented in this pasture include 1) the big sagebrush/Great Basin wildrye community, 2) the big sagebrush-bitterbrush/Indian ricegrass community on sandy soils, and 3) the big sagebrush/bluebunch wheatgrass community. Sufficient remnant native plants occur in the pasture that a seed source is readily available for continuing re-establishment of the native species. The planting of bitterbrush seed would accelerate and enhance plant community values in this pasture. Ungrazed, this pasture also would contain an excellent representation of the sand hills ecological composition and processes which occur in a narrow band surrounding the Snake River valley.

Grazing use in Sandhills West pasture would occur after the critical growing season, and native bunchgrasses would be expected to improve in both numbers and vigor under this grazing treatment. Vegetation in the vicinity of the two new pipeline extensions would receive concentrated use, but the only effect to the plants would be removal of litter and some trampling at the vicinity of the troughs.

Grazing in Tub Mountain pasture would completely avoid the critical growing season for all native bunchgrass species under any climatic regime, and they would therefore be expected to make substantial increases in both numbers and vigor under this alternative. Planted bitterbrush would be utilized by cattle during the entire fall/winter season once the temporary fences were removed. Severely hedged

bitterbrush have less vigor and are less likely to reproduce. There would be some mortality on young plants under this alternative, and establishment of new plants would be slow at best.

Vigor of native perennial bunchgrasses in the Alkali Flat pasture may suffer under this alternative due to growing season use each year. However, if successful, the proposed seedings should supply additional forage for livestock use and generally take pressure of grazing off the native range, resulting in no effect to the native bunchgrasses. Annual vegetation should remain vigorous due to the additional forage provided by the seedings.

Under this alternative, additional acres at Alkali Spring would receive total protection from disturbance, resulting in an expanded wetlands area composed of alkaline vegetation. Recovering alkaline wetlands are relatively rare, and vegetation succession in the enclosure would provide much botanical interest.

Vegetation - Special Status Species

This alternative is highly favorable to both special status species. No impacts from grazing, either through ingestion or trampling, would occur to the two special status plant species in Sandhills East. The late season grazing in Sandhills West would not affect Malheur forget-me-not because its growing would be completed by the date livestock would be turned into the pasture.

Closure of the Henry Gulch water trough would protect and enhance a known site of Malheur forget-me-not near the trough where heavy use has resulted in only a few remaining individuals. The site may be expected to increase in both numbers and vigor of the forget-me-not.

Vegetation - Noxious Weeds

With reestablishment and improved vigor of native vegetation in both Sandhills East and West under this alternative, sites available for colonization by weeds would be gradually eliminated, and the establishment of weeds would be reduced in these areas. The seeding in South Alkali pasture would be of major value by returning many acres of the annual range into perennial vegetation. The spread of Scotch thistle and medusahead wildrye would be thwarted in this pasture by vigorous seedings.

Soils

Although this alternative would create two new pastures, one of them would not be grazed by livestock. Elimination of livestock grazing in the Sandhills East pasture would reduce the flexibility of grazing in the remaining pastures. Although this alternative would result in improved livestock control when compared to Alternatives A and D, Alternative B would result in more potential improvement in watershed condition. Removal of livestock from the Sandhills East pasture would eliminate any impacts due to livestock there.

Control of livestock water sources in the Tub Mountain pasture and the addition four new water troughs in the planning area would benefit watershed conditions by improving distribution of livestock. However, each new water trough would create an area of concentrated livestock use where soil compaction and erosion would increase. This alternative would create fewer of these areas than Alternatives A or B.

Discontinuing use of the Henry Gulch water trough would allow soil erosion and compaction to decrease in that area.

This alternative would graze Alkali Flat pasture every other spring. Alternatives A and B would both result in more rapid improvement of soil compaction conditions in this pasture than Alternative C.

The seedings proposed under this alternative would benefit watershed conditions more than under the other alternatives. Seeding of perennial grasses and forbs in Alkali Flat and Henry Gulch is likely the only way to establish desirable vegetation in these degraded areas. Without seeding the area would likely remain vegetated by undesirable annual vegetation for the foreseeable future. Seeding of brush in the Tub Mountain pasture would have little effect upon watershed conditions in that pasture. Hand planting of bitterbrush in Sandhills East would also have little effect on watershed conditions.

Road maintenance practices which result in improved road drainage would reduce soil erosion rates. Roads are one of the primary contributors to soil erosion and sediment production. Practices such as waterbars, drain dips and out-sloping would reduce the concentrating effects that roads have on surface flows and reduce soil erosion.

Expansion of the "Limited" OHV designation along the Oregon Trail Route and limiting vehicles to designated routes in the sand hills area would protect

soil resources in these areas. Vehicles driving off of roads accelerate soil erosion by removing vegetation and compacting soils which, in turn, channels surface runoff in the wheel tracks.

Expansion of the area designated for No Surface Occupancy along the Oregon Trail corridor would eliminate potential impacts to soils and water that would result from mineral development on 650 acres.

Hydrology/Riparian

The riparian area inside the Henry Gulch exclosures should continue to improve. An upland trough in Henry Gulch Seeding and shutting off the trough near the exclosure would result in less cattle use in the riparian area. In addition, the pasture would receive early spring use every other year. This should result in gradual improvement in the riparian vegetation and condition of the stream outside the exclosure.

The expansion of the Alkali Spring exclosure to include most of the associated wetlands on public land would result in improvement of riparian condition. Planting native riparian vegetation would speed recovery of the riparian area compared to Alternative A.

Wildlife - General

Winter browse and cover for big game species would increase in the Tub Mountain pasture. There would be an increase in bitterbrush for winter browse in the Tub Mountain and Sandhills pastures. More bitterbrush, which is an important winter browse species, would be available than under Alternatives A, D, and E. When the temporary fences were removed from the Tub Mountain bitterbrush plantings, cattle would utilize bitterbrush in the fall. Bitterbrush seedlings would be heavily utilized and less likely to become established shrubs. Therefore, less browse would be available in Tub Mountain pasture over the long term than under Alternative B. Although wintering mule deer would still migrate through the area to private lands, more browse and cover would be available on public lands to delay them. As bitterbrush and other shrub cover increased, depredation to crops on private lands should decrease. Planted shrubs are more likely to be totally lost in a future wildfire than under Alternative B because the species planted would be unlikely to resprout after an intense fire. Therefore, the present situation would be likely to occur again.

Other wildlife species would benefit from increased forage and cover, especially in the Alkali Flat and Henry Gulch Seeding pastures, where a seeding

would replace weeds that are presently there. Roadside seedings would decrease the likelihood of further weed invasion degrading wildlife habitat. All grass seedings would provide wildlife forage during spring and fall green-up. Seedings would also provide more of a fire break, which could prevent the loss of some shrub cover in a wildfire situation, which would benefit big game and other shrub-dependent species.

Wildlife - Special Status Species

Nesting areas for long-billed curlews would be protected from OHV use under this alternative. Since burrowing owls and ferruginous hawks also nest in areas used by long-billed curlews, they would also be protected. Seedings would be designed to avoid disturbance to nesting for these species. Increased shrub cover would eventually decrease the habitat for long-billed curlew on the lower slopes of Tub Mountain. However, the majority of the nesting area is in the flats where shrubs will not be planted. Therefore, the impacts would be minimal. Shrub cover would lessen the desirability of those lower slopes for ferruginous hawk nesting. There should be no other negative impacts to those species. An increase in sagebrush should improve potential habitat for the northern sagebrush lizard. Desert horned lizards would be protected from OHV use in the Sand Hills pasture.

Recreation and Visual Resources

Expansion of the Alkali Springs interpretive site exclosure, south extension of the No Surface Occupancy stipulation and OHV "limited" use designation to include the interpretive site and planting of native species within the Oregon Trail corridor would provide higher levels of protection for recreational enjoyment of the historic trail's setting and the capital improvements of the interpretive site. Opportunities for wildlife observation would be enhanced with improved riparian habitat at Alkali Springs.

Alternative locations would be considered for any proposed competitive OHV events. Notable wildflower viewing opportunities in the sand hills would be provided protection from OHV use in the area. Success with seedings over the long term may improve opportunities for big game hunting. Other dispersed recreational uses would remain available with no significant adverse impacts on them.

The mechanical seedings and new range improvement facilities would visually impact the characteristic landscape at specific locations, presenting a contrast

in natural settings, while meeting VRM Class IV objectives for the area. The visual setting at Alakli Springs and within the Oregon Trail's management corridor would be enhanced with the return of a more natural setting within the enlarged exclosure and the seeding of native species.

Cultural Resources and the Oregon Trail

A Cultural Resource survey would be conducted prior to any ground disturbing activities. A survey report would be submitted to the State Historic Preservation Office (SHPO) and concurrence received prior to the construction of the proposed project. If cultural resources were located, mitigation or avoidance measures would be implemented.

See Recreation and Visual Resources for a discussion of this Alternative on Alkali Spring Interpretative Site.

Livestock Grazing

Costs for Range Improvements would be shared by the Malheur County Advisory Board, BLMs range improvement funds and by the grazing permittees. Costs for range improvements would be approximately \$12,000 for fencing, \$36,000 for water development and \$100,000 for seeding.

Permittees would be affected by the one time shared cost of the new improvements and a slight long term cost in the form of maintenance of those improvements. There would be a very slight increase in labor due to the herding requirements and pasture moves under the new grazing system. One of the permittees would be required to find alternative feed or pasture during the period 4/1 to 5/1. It would be possible to offset this loss by grazing during the period 9/1 to 10/1 when livestock were previously on private feed/pasture. There would be a loss of 670 AUMs of active preference due to the Sandhills East pasture not being available for livestock use. This would represent a reduction of 96 cattle for the users of the Sandhills, Alkali Flat and Henry Gulch pastures. If Alkali Flat and Henry Gulch were to be successfully seeded, a portion of the reduction (300 to 500 AUMs) may be restored. Seeding would require a further temporary reduction of up to 500 AUMs for at least two years to allow for seeding establishment. The area seeded would be unavailable for grazing during that period and livestock would have to be moved to private pasture during the period they were scheduled to graze the area seeded.

Lands and Realty

There would be no affect on lands and realty. The public lands would remain open to the operation of the public land laws.

Minerals

The Oregon Trail corridor would remain available for mineral leasing. Any leases that would be made available would be leased with a stipulation that would allow No Surface Occupancy of portions of leases within the corridor. The portions within the corridor could be accessed from other lands. For example, any geothermal resources that may be identified under the corridor could be accessed with wells located on other lands using angle drilling techniques. The area has been rated as having a high potential for the occurrence of geothermal resources.

Alternative D Environmental Consequences

Vegetation - General

Because no growing season use is made in either Tub Mountain or Sandhills Pastures, perennial bunchgrasses would be expected to increase in both numbers and vigor under this alternative. Full growth of perennial bunchgrasses would occur yearly. Because Alkali Flat is predominantly annual range, little impact should occur to remnant bunchgrasses in this pasture, although grazing through May 1 may result in no regrowth on grazed bunchgrasses in drought years. With this grazing scheme, annual vegetation should be able to continue to make growth after grazing is removed in average to above average rainfall years. Strong annual range would thus be maintained.

Because no separate pasture would be constructed for Henry Gulch seeding, concentrated use would not be made on the seeding and the area would not be as effectively used as it would be with a smaller pasture unit. However, the winter/very early spring grazing in the Sandhills Pasture would probably result in excellent distribution of livestock throughout the hills, with good use made of the seeded area.

The area to be acquired around Alkali Spring would remain open to grazing, although the grazed period would be only five weeks. Because this is a peren-

nial spring and almost total regrowth would occur yearly, the wetlands would be expected to make gradual vegetative improvement over time.

Remnant bitterbrush in Tub Mountain pasture would be utilized by cattle during the critical late summer-fall season and are not likely to become more vigorous. Naturally established seedlings would be utilized heavily by cattle, causing mortality and slowing down the spread of bitterbrush.

Vegetation - Special Status Species

With winter/early spring use, the only impact anticipated to special status species under this alternative would be possible mechanical disturbance to sites. Both species would have the full growing season to complete their annual growth cycles. Concentrating full numbers of cattle in Sandhills Pasture for slightly over two months may result in significant mechanical disturbance at some special status plant sites; however, it is difficult to assess impacts because this kind of grazing has rarely been tried. Distribution of livestock should be excellent at this time of year, resulting in fewer high concentration areas.

Vegetation - Noxious Weeds

With improved ecological conditions resulting from the fall/winter/early spring grazing in the entire allotment, sites should be reduced for potential invasion by noxious weeds. Both perennial and desirable annual vegetation would have a full growing season to complete yearly growth, giving them a competitive advantage over the noxious weeds.

Soils

Although no new pastures or water developments are proposed, livestock distribution would improve under this alternative. The Tub Mountain and Sandhills pastures would each receive grazing during the winter and early spring. Livestock distribution would be improved due to more dispersion into the hills during the cool season. This would improve watershed conditions in these pastures. With no new water troughs, there would be no new areas of concentrated livestock use.

Alkali Flat would be grazed early every spring under this alternative. This would result in continued high levels of soil compaction in this area. Although the short spring grazing period proposed under this alternative would allow for vegetative regrowth, soil conditions would not improve in this area.

Road maintenance practices which result in improved road drainage would reduce soil erosion rates. Roads are one of the primary contributors to soil erosion and sediment production. Practices such as waterbars, drain dips and out-sloping would reduce the concentrating effects that roads have on surface flows and reduce soil erosion.

Expansion of the area designated for No Surface Occupancy along the Oregon Trail corridor would eliminate potential impacts to soils and water that would result from mineral development on 650 acres.

Hydrology/Riparian

Riparian condition inside the Henry Gulch exclosures would continue to improve. The Sandhills pasture, which includes Henry Gulch in this alternative, would only be grazed in the winter to early spring. This should allow gradual improvement in riparian vegetation and condition outside the exclosures.

The expansion of the Alkali Spring enclosure to include most of the associated wetlands on public land would result in improvement of riparian condition. Presently, a seed source for some riparian vegetation is lacking, though herbaceous riparian species are found within the enclosure. This could result in slower recovery than would occur under Alternatives B and C.

Wildlife - General

There would be a continued lack of shrub cover and browse in the Tub Mountain pasture and no improvement in the bitterbrush component would occur. Wintering mule deer would continue to move through the area and depredate crops on private lands to the same degree as in recent years. Natural seeding of shrubs would be slow because of the present lack of a seed source. There would be a conflict between mule deer and cattle use of any palatable shrubs that were established in Tub Mountain pasture. Shrub establishment would also be precarious because of the likelihood of wildfires.

Other wildlife species would benefit from increased forage and cover expected from the change in the grazing system.

Wildlife - Special Status Species

Nesting areas for long-billed curlews would be protected from OHV use under this alternative. Since burrowing owls and ferruginous hawks also nest in areas used by long-billed curlews, they would also be

protected. Habitat for long-billed curlews and ferruginous hawks would remain the same in the Tub Mountain pasture. There would be little improvement in potential habitat for the northern sagebrush lizard. Desert horned lizards would not be protected from OHV use in the Sandhills pasture.

Recreation and Visual Resources

Impacts on recreation resources and use opportunities would be the same as described under Alternative E (No Action).

Cultural Resources and the Oregon Trail

No cultural resource surveys would be necessary, since no projects are proposed with this alternative.

See Recreation and Visual Resources for a discussion of this alternative on Alkali Spring Interpretative Site.

Livestock Grazing

There would be no increased costs associated with range improvements.

There would be increased costs to permittees due to the change in season of use. Permittees would have to find alternative feed or pasture during the period 5/1 to 10/1, costs would be partially offset with permittees being able to graze during the period 11/1 to 4/1 when they previously had to provide feed or pasture on private or leased lands. This would represent no change to one of the permittees (Roche) and a large change to the other permittees.

Lands and Realty

There would be no affect on lands and realty. The public lands would remain open to the operation of the public land laws.

Minerals

The Oregon Trail corridor would remain available for mineral leasing. Any leases that would be made available would be leased with a stipulation that would allow No Surface Occupancy of portions of leases within the corridor. The portions within the corridor could be accessed from other lands. For example, any geothermal resources that may be identified under the corridor could be accessed with

wells located on other lands using angle drilling techniques. The area has been rated as having a high potential for the occurrence of geothermal resources.

Alternative E (No Action) Environmental Consequences

Vegetation - General

Perennial bunchgrasses in Tub Mountain Pasture would remain static most years, may improve slightly if good soil moisture permits regrowth of plants, and probably would decline in drought years when no moisture would be available for regrowth. Established bitterbrush would not experience mortality, but young plants may not become established if they are utilized during the winter grazing period.

With the existing situation, the flats near Alkali Spring are denuded of annual vegetation yearly, with the result that less desirable annuals such as medusahead wildrye are replacing more desirable annuals such as cheatgrass. The season-long grazing does not permit increase in either vigor or numbers of perennial bunchgrasses in the area.

The alkaline wetlands outside the current enclosure would not improve.

The seeding near Henry Gulch would continue to be poorly utilized. Distribution would remain poor, particularly in the Sandhills area, as grazing would continue during the summer months each year.

Vegetation - Special Status Species

The Malheur forget-me-not site near Henry Gulch watering trough would continue to be heavily utilized, with the few remaining plants surviving in a weakened state. Other Malheur forget-me-not sites would continue to be subject to trampling during the season-long grazing. Mulford's milk-vetch may be ingested by livestock during its critical growing period. This alternative continues grazing yearly at the critical period for this species. The continuing increase of noxious weeds under this alternative may affect special status plant sites by the weeds replacing weakened or non-reproductive native species on or near critical habitat.

Vegetation - Noxious Weeds

The noxious weeds would continue to become established at open sites, particularly where the more desirable annual vegetation in Alkali Flats is severely grazed each year. Because no increase in vigor or numbers of native perennial bunchgrasses would occur under the existing situation, weeds would continue to be primary competitors.

Soils

This alternative would result in the least watershed improvement. There would be no improvement of livestock distribution through fencing, water developments or change of season, no seeding of desirable vegetation and no additional livestock enclosures.

The 2 mile stretch of the Oregon Trail between Tub Springs and Alkali Flat would remain available for mineral lease development and all associated potential soil and water impacts.

Hydrology/Riparian

Riparian conditions inside the Henry Gulch enclosures would continue to improve. Conditions would continue to degrade outside the enclosures.

Riparian condition outside the present enclosure at Alkali Spring would not improve. Riparian vegetation inside the enclosure would improve.

Wildlife - General

There would be a continued lack of shrub cover and browse in the Tub Mountain pasture and no improvement in the bitterbrush component would occur. Wintering mule deer would continue to move through the area and depredate crops on private lands to the same degree as in recent years. Natural seeding of shrubs would be slow because of the present lack of a seed source. There would be a conflict between mule deer and cattle use of any palatable shrubs that were established naturally in Tub Mountain pasture. Shrub establishment would also be precarious because of the likelihood of wildfires.

Wildlife forage and cover would not improve. Weeds would continue to displace both native species and cheatgrass, which would have a negative impact on wildlife habitat.

Wildlife - Special Status Species

Nesting areas for long-billed curlews would be protected from OHV use under this alternative. Since burrowing owls and ferruginous hawks also nest in areas used by long-billed curlews, they would also be

protected. Habitat for long-billed curlews and ferruginous hawks would remain the same in the Tub Mountain pasture. There would be little improvement in potential habitat for the northern sagebrush lizard. Desert horned lizards would not be protected from OHV use in the Sandhills pasture.

Recreation and Visual Resources

The Alkali Springs interpretive site and its characteristic landscape would be subject to surface disturbing activities associated with approved mineral exploration/extraction activities and/or by motorized vehicle use off of the existing county road, causing adverse impacts to desired recreation experiences along the Oregon National Historic Trail at this location. Opportunities to enhance the setting at Alkali Springs for the Oregon Trail recreation experience and for wildlife viewing opportunities would be foregone with no expansion of the existing enclosure. Notable wildflower viewing areas in the sand hills would remain subject to OHV use impacts. A defined area of the sand hills area would remain available for OHV competitive events.

The lack of wildlife habitat improvement would preclude opportunities of enhance recreational hunter experiences in the area over the long term. Other dispersed recreational uses would not be significantly affected.

Cultural Resources and the Oregon Trail

No cultural resource surveys would be necessary, since no projects are proposed with this Alternative.

See Recreation and Visual Resources for a discussion of this Alternative on Alkali Spring Interpretative Site.

Livestock Grazing

There would be no change to existing livestock operations. It is likely reductions in active use would have to be implemented in the future in order to meet management objectives.

Lands and Realty

There would be no affect on lands and realty. The public lands would be open to the operation of the public land laws.

Minerals

The 650 acres covered by the Oregon Trail corridor between Tub Spring and Alkali Flat would remain available for mineral lease development.

V. Participation

Public Participation

Formal solicitation was made for written input from a broad representation of governmental agencies, organizations and individuals via the District mailing list and a public press release. In addition, input has been solicited from the South Alkali Allotment grazing permittees and the Oregon Department of Fish and Wildlife. Input received was considered in the development of objectives and management alternatives.

Participating Staff

Bob Alward, Outdoor Recreation Planner, Malheur Resource Area

Randy Eyre, Range Conservationist, Malheur Resource Area

Jean Findley, Botanist, Vale District

Connie George, Engineering Draftsman, Vale District

Ralph Heft, Area Manager, Malheur Resource Area

Bonnie Jakubos, Wildlife Biologist, Malheur Resource Area

Diane Pritchard, Archaeologist, Malheur Resource Area

Ken Thacker, Soil Conservationist, Malheur Resource Area

Nancy Getchel, Realty Specialist, Malheur Resource Area

Jerry Erstrom, Vale District Weed Coordinator

Jerry Bourasa, Range Technician, Malheur Resource Area

Richard Martinez, Engineering Technician, Malheur Resource Area

Glossary

Active Mining Claim - A mining claim staked in accordance with the provisions of the Mining Law of 1872 which has not been voided or extinguished by a federal administrative or legal action.

Active Preference - That portion of the total grazing preference for which grazing use may be authorized.

Active Use - The total number of AUMs authorized for grazing by livestock.

Activity Plan - A document which describes management objectives, actions and projects to implement decisions of planning documents.

Allotment - An area of public land, consisting of one or more pastures, where one or more operators graze their livestock which may include parcels of state or private land. The number of livestock and season of use are stipulated for each allotment.

Animal Unit Month (AUM) - The amount of forage required to sustain one cow with one calf, or their equivalent for one month.

Area of Critical Environmental Concern - An area of BLM administered lands where special management attention is needed to protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resource or other natural systems or processes; or to protect life and provide safety from natural hazards.

Bureau Sensitive Species - Plant or animal species eligible for federal listed, federal candidate, state listed, or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Data Base, or approved for this category by the State director.

Candidate Species - Those plants and animals included in Federal Register "Notices of Review" that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered. There are two categories that are of primary concern to BLM. These are:

Category 1 Species - Taxa for which the FWS has substantial information on hand to support proposing the species for listing as threatened or endangered. Listing proposals are either being prepared or have been delayed by higher priority listing work.

Category 2 Species - Taxa for which the FWS has information to indicate that listing is possibly appropriate. Additional information is being collected.

Carrying Capacity - The maximum number of animals an area can sustain without inducing damage to vegetation or related resources, such as soil and water.

Critical Growing Period - The portion of a plant's growing season, generally between flowering and seed ripe, when defoliation is most detrimental.

Cultural Resources - Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

Deferred Grazing - Grazing occurs after a specified period, such as after seed ripe of key forage species.

Developed Recreation Site - A site developed with permanent facilities designed to accommodate recreation use.

Dispersed Recreation - Outdoor recreation which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are primarily for access and protection of the environment rather than comfort or convenience of the user.

Environmental Assessment (EA) - A systematic analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal Environmental Impact Statement (EIS) is required; and to aid an agency's compliance with NEPA when no EIS is necessary.

Environmental Impact - The positive or negative effect of any action upon a given area or resource.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.

Grazing System - The specific way in which the amount and timing of grazing is planned for a given area.

Gully - A soil erosion channel formed by surface flowing water which has been concentrated in a narrow area. Depths can range from a few feet to as much as 100 feet.

Habitat - The place where a plant or animal naturally lives and grows.

Impact - A spatial or temporal change in the environment caused by human activity.

Impair - To diminish in value or excellence.

Leasable Minerals - Minerals which may be leased to private interests by the federal government. Includes oil, gas, geothermal resources and coal.

Listed Species - Any species of fish, wildlife or plant which has been determined to be endangered or threatened under Section 4 of the Endangered Species Act. It is any plant or animal which is in danger of extinction throughout all or a significant part of its range. Listed species are found in 50 CFR 17.11-17.12.

Locatable Minerals - Minerals subject to exploration, development and disposal by staking mining claims as authorized by the Mining Law of 1872 (as amended). This includes valuable deposits of gold, silver and other uncommon minerals not subject to lease or sale.

Management Framework Plan (MFP) - A land use plan that established coordinated land use allocations for all resource and support activities for a specific land area within a BLM district. It established objectives and constraints for each resource and support activity and provided data for consideration in program planning. This process has been replaced by the Resource Management Planning process.

Mining Claim - Portions of public lands claimed for possession of locatable mineral deposits, by locating and recording under established rules and pursuant to the 1872 Mining Law.

Mitigating Measures - Modifications of actions which (a) avoid impacts by not taking a certain action or parts of an action; (b) minimize impacts by limiting the degree or magnitude of the action and its implementation; (c) rectify impacts by repairing, rehabilitating or restoring the affected environment; (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or (e) compensate for impacts by replacing or providing substitute resources or environments.

Monitoring/Evaluation - The orderly collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management objectives.

Noxious Weed - A plant specified by law as being especially undesirable, troublesome and difficult to control.

Off-Highway Vehicle (OHV) - Any motorized track or wheel vehicle designed for cross country travel over natural terrain.

Off-Highway Vehicle Designation -

Open: Designated areas and trails where off-road vehicles may be operated subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343.

Limited: Designated areas and trails where off-road vehicles are subject to restrictions limiting the number or types of vehicles, date and time of use; limited to existing or designated roads and trails.

Closed: Areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. Emergency use is allowed.

Pasture - A subdivision of a grazing allotment capable of being grazed by livestock independently from the rest of the allotment.

Primitive and Unconfined Recreation - Nonmotorized and undeveloped types of outdoor recreation activity.

Raptor - Birds of prey, such as hawks, eagles and owls.

Resource Management Plan (RMP) - A land use plan that establishes coordinated land use allocations for all resource and support activities for a specific land area within a BLM district. It establishes objectives and constraints for each resource and support activity and provides data for consideration in program planning.

Revegetation - Reestablishment of a vegetative cover on a disturbed or burned area.

Right-of-Way - A permit or an easement that authorizes the use of public lands for specified purposes,

such as pipelines, roads, telephone lines, electric lines, reservoirs and the lands covered by such an easement or permit.

Rotational Grazing - Grazing use is subdivided into units or pastures with grazing taking place in one unit, then another, in regular succession. This rotational use can be alternated between years in a variety of grazing systems.

Salable Minerals - Minerals which may be sold or otherwise disposed of by the federal government, as authorized by the Material Sale Act of 1947. These include common varieties of stone, clay, sand, gravel, volcanic cinders, petrified rock, etc.

Scenic Quality - The relative worth of a landscape from a visual perception point of view.

Soil - A natural body on the surface of the earth composed of mineral and organic materials, living forms, air and water.

Soil Compaction - Increase in soil density due to mechanical forces.

Soil Erosion - Detachment and movement of soil or rock by water, wind, ice, or gravity.

Special Status Species - Plant or animal species falling in any of the following categories (see separate glossary definitions for each):

- Threatened or Endangered Species
- Proposed Threatened or Endangered Species
- Candidate Species
- State Listed Species
- Bureau Sensitive Species
- Bureau Assessment Species

State Listed Species - Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026 or ORS 564.040.

Suspended Preference - The number of AUMs removed from a permittee's active preference.

Threatened Species - Any species defined through the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range and published in the Federal Register.

Total Preference - The active preference and suspended preference together make up total preference.

Utilization - The proportion of the current year's forage production consumed or destroyed by grazing animals. This term may refer to a single species or to the whole vegetative complex.

Visual Resource Management (VRM) Classes - The inventory and planning actions to identify visual values and establish objectives for managing those values and the management actions to achieve visual management objectives.

Withdrawal - A designation which restricts or closes public lands from the operation of land or mineral disposal laws.

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

VALE DISTRICT OFFICE
100 Oregon Street
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OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

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